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A Lecture
ON
THE AFTERMATH OF EYE-STRAIN.

Being the Richard Middlemore Post-Graduate Lecture, delivered on Dec. 1st, 1910, at the Birmingham and Midland Eye Hospital,

BY SYDNEY STEPHENSON, M.B., C.M. EDIN., D.O. OXON., F.R.C.S. EDIN.,
OPHTHALMIC SURGEON TO THE QUEEN'S HOSPITAL FOR CHILDREN AND QUEEN CHARLOTTE'S HOSPITAL.

GENTLEMEN,—Among the minor ills of life few occupy a more important place than those which arise from eye-strain. Many a headache, many an attack of giddiness, many an instance of "brain-fag," and many a so-called "nervous breakdown" tells only too surely of an unsuspected error of refraction, or of subnormal accommodation, or of a muscular imperfection of the eyes, all of which may be relieved by suitable spectacles. These cases come in the first instance under the notice of the family medical adviser rather than of the ophthalmic surgeon. It is therefore a matter of no little consequence for him to be acquainted with the peculiarities of eye-strain, so that patients may be freed from their discomfort in the speediest possible way. What I have to say will not deal with those physical peculiarities of the eye which give rise to the several conditions known as hyperopia, myopia, or astigmia. They have been made the subject of a former Middlemore lecture by Mr. Henry Eales.[1] On the contrary, my remarks will deal with the several conditions known and believed to result from eye-strain, and in describing them I shall touch upon the evidence on which our knowledge is based.

GENERAL REMARKS.

1. *How to recognise symptomatic eye-strain.*—Whenever a headache, migraine, vertigo, or "tic" is induced or made worse by use of the eyes and relieved by rest we may safely assume it is due to eye-strain. That supposition is strengthened (paradoxical though it may seem) if the patient possesses sight which when estimated by the test-types is found to be normal or super-normal. It is a suspicious circumstance if headache is complained of after a visit to a theatre or a picture gallery, or a journey by train, tram, or car. There is more than the proverbial grain of truth in the epigram of an American physician who remarked that there was nothing particularly characteristic about the headache of eye-strain, except that the subject rarely suspected that his eyes were at fault. This point has been emphasised anew by Dr. James Hinshelwood, of Glasgow.[2] Then there is the fact that an ocular reflex can often be inhibited for the time being by putting a drop of atropine (or other cycloplegic) into the patient's eyes. Lastly, it can scarcely be repeated too often that no eye can be pronounced to be normal unless its refraction has been estimated by a competent surgeon under the influence of a cycloplegic.

2. *The kind of patient.*—Slight errors of refraction are most likely to cause distress in persons who have inherited or acquired an unstable nervous system, the "neuropathic" disposition, as Dr. George T. Stevens called it.[3] In my opinion, this factor dominates the entire question of eye-strain, especially in its severer manifestations. Women and children suffer more readily than men, among whom the highly strung are the more liable. The higher classes are more prone than the lower; the cultured than the uncultured. Clerks, teachers, stenographers, dressmakers, typewriters, students, and others compelled by occupation to use the eyes for hours at a time are particularly subject to the symptoms of eye-strain. The general health of the patient is by no means devoid of influence. It is clear that an error of refraction or of muscular balance is more likely to cause distress if the patient is in poor health, as from influenza, or debilitated, as from lactation or recent confinement. It is not uncommon for the trouble to disclose itself for the first time under such circumstances, even although the underlying ocular defect may have existed from childhood or even have been congenital.

3. *How eye-strain shows itself.*—By common consent, headache is the commonest reflex manifestation of eye-strain. It has been variously estimated that headaches of ocular origin form from 60 per cent. to 90 per cent. of all cases of headache. In an analysis of 106 instances of reflex neuroses probably due to the eyes, Dr. H. B. Ellis[4] found that headache was present in 87·7 per cent., digestive and assimilative disorders in 5·7 per cent., blind spells in 3·8 per cent., mental symptoms, loss of memory, &c., in 1·9 per cent., and insomnia in 0·9 per cent. The late Mr. Simeon Snell[5] found that of 800 consecutive refraction cases that came under his notice 162—that is, about 1 in every 5—sought advice in consequence of headache.

4. *The kind and magnitude of the error.*—Of all errors of refraction slight grades of hyperopia, and particularly of hyperopic astigmatism, are those most likely to cause distress. The tendency is greatly increased if the error be asymmetrical as regards the axis of the cylinder or be unequal in the two eyes. On the other hand, myopic defects usually produce poor sight rather than the common reflex manifestations of eye-strain, such as aching eyes or head.

The results of strain are more likely to occur when the underlying error of refraction is so small that it can be mastered for the time being by action of the ciliary muscle. To put the matter in another way, a large error of refraction, which cannot be overcome by those means, leads, as a rule, to defective sight and not to eye-strain. "The smaller the error," it has been aptly said,[6] "the more likely is eye-strain to be present, and also, unfortunately for the patient, the more likely is it to be overlooked."

Patients with eye-strain, then, seldom show any serious departure from normal when their relative visual acuity is estimated at Snellen's test-types, an important point for the physician to bear in mind.

5. *Method of estimating the error.*—The days are fairly outlived when it was seriously taught that an astigmatism of less than 1·00 D., provided it caused no interference with sight, might be safely disregarded. It is now recognised that under some conditions an amount of astigmatism of no more than 0·25 D. or even 0·12 D. may cause intense discomfort. For the detection of such small errors our means of examination can scarcely be too accurate. It goes without saying that the surgeon himself must be well versed in refractions. He must be equipped with suitable lenses, correctly designed trial-frames, and properly illuminated and drawn test-types, and he should be expert in the use of the retinoscope and of other instruments of precision, such as the keratometer. Everything hinges upon exactitude. "It is the little, the inconsiderable thing, in refraction work upon which the relief of the reflexes depends" (George M. Gould[7]).

Now the precise determination of ametropia, especially the low degrees of ametropia, is not possible, I believe, unless the eyes be under the influence of some agent, as homatropine, hyoscin, or atropine, which is capable of paralysing the ciliary muscle, a cycloplegic in fact. In no other way, to my thinking, can the full measure of the defect be disclosed. In young persons, indeed, the accommodation is so active that it may conceal a hyperopia of several diopters, to say nothing of a considerable degree of astigmia. To a certain extent the remark is true of older patients also. Not only must the cycloplegic be of the right kind, but it must be applied until accommodation is placed wholly in abeyance, a point that should always be ascertained by means of a suitable test. Speaking generally, the most trustworthy results are obtained when the selected drug is applied to the eyes by the surgeon himself.

SPECIAL REMARKS.

The ground having so far been cleared, we may now pass forward to consider in some detail those symptoms, general and local, which may result from eye-strain.

Although astigmatism was described more than a hundred years ago by Thomas Young,[8] yet our knowledge of its

[1] Henry Eales: Birmingham Medical Review, 1891, vol. xxix.
[2] James Hinshelwood: THE LANCET, July 14th, 1906, p. 78.
[3] George T. Stevens: Functional Nervous Diseases, New York, 1887.
[4] H. B. Ellis,: New York Medical Journal, April 30th, 1892.
[5] Simeon Snell: Eye-strain as a Cause of Headache and other Neuroses, London, 1904, p. 30.
[6] Ernest Clarke: Clinical Journal, March 2nd, 1910.
[7] George M. Gould: Biographic Clinics, vol. ii., p. 361, 1904.
[8] Thomas Young: Philosophical Transactions, 1793, p. 169.

pathological significance dates only from 1874, when Dr. S. Weir Mitchell,[9] of Philadelphia, published a remarkable article on the subject. Dr. Mitchell minimised the influence of rheumatism as a cause of headache and denied that of gout altogether. In particular, he directed attention to the headache of unsuspected eye-strain. He pointed out that "headaches come with many intraocular disorders, but neither in the books on the eye nor elsewhere is it made plain that headaches may be for years almost the sole symptom of grave disorders of accommodation, or of defect in the orderly action of the external eye muscles." In cases of chronic headache Dr. Weir Mitchell[10] insisted upon the necessity of "a careful study of the eye," and thereby laid future generations under a heavy debt of gratitude. In the following year Dr. Mitchell published his well-known "Notes on Headaches," in which he drew attention to the influence of illness, worry, anxiety, and so forth, in converting a latent defect of the eyes into one that produced active symptoms, as shown by headache and a sense of strain. About the same time as Dr. Mitchell's second paper was published an extraordinary case (which has since become almost classic) was brought before the Clinical Society of London by Mr. R. Brudenell Carter.[11] An undergraduate, whilst reading for honours, was suddenly attacked with diplopia, vertigo, headache, sickness, and palpitation of the heart, which were attributed to some obscure affection of the brain, a diagnosis confirmed by physicians both at the University and in London. The patient was sent on a voyage to Australia but came home no better. He was then told that he must give up all hope of succeeding to his father's business and abandon a marriage engagement to which he was committed. His prospects in life were blighted, and his despondency was commensurate with his misfortunes. Mr. Carter found this unfortunate young man to be short-sighted to the extent of 4·5 D., and after suitable spectacles were prescribed, all symptoms disappeared. It is satisfactory to add that when last heard of the patient was about to engage both in business and in matrimony.

A very suggestive case was reported by Dr. Weir Mitchell[12] in 1876. A girl, aged 16 years, suffered from headache, induced by use of the eyes, for several days after each of her periods, and at a later stage she developed an occasional unsteadiness of gait, together with a sudden sense of terror and vertigo. Her rest was broken and disturbed by dreams. By the aid of the ophthalmoscope a condition of "cerebral anæmia" was diagnosed. Under the use of glasses the vertigo at first grew worse, but soon it and the headache and insomnia passed away, so that in a month she was able to read, sew, and write for hours at a time.

In an oration delivered before the Medical Society of London in 1877 Dr. J. Hughlings Jackson[13] spoke of cases of abnormal refraction simulating brain disease, and he instanced the case of a medical student, 21 years of age, who had been obliged to give up his work because it brought on attacks of frontal headache and vomiting. To ordinary examination vision appeared to be good, but on remedying the hyperopic astigmia discovered on more complete examination the patient was enabled to return to his work and to graduate at the University of London. He had remained well up to the time Dr. Jackson wrote, a period of two years.

These communications drew the attention of the medical profession to the fact that headache was a common manifestation of overtaxed eyes, and that it might be accompanied by even more ominous symptoms. This enlightenment means a good deal, for, truth to say, many a member of the public goes direct to the ophthalmic surgeon when he finds that use of the eyes tends to make his head uncomfortable.

The functional headache of eye-strain is commoner than is generally thought. Pain may be present in almost any degree of severity, but is apt to be described by patients as a "dull aching" with paroxysms of more acute suffering from time to time. Although there is no characteristic position, yet the commonest site of ocular pain is over the brow and next to that in the temple. Occipital, vertical, and general headaches are by no means unknown as the direct consequence of strain upon the eyes. The cephalalgia is often associated with pain at the back of the eyes, which are apt to be tender. As a rule, both eyes suffer equally unless there be a marked difference in the refraction, when in common experience discomfort is usually worse on the side of the better eye. Apart from actual pain, the eyes may feel heavy, tired, or become red after use, or there may be complaints that they throb, burn, or water. A sign almost conclusive of eye-strain is the existence of slightly reddened eyelids, about the lashes of which are to be seen a number of fine branny scales. Whenever this condition (sometimes called "ametropic blepharitis") is seen we should at once think of asthenopia. An outbreak of small styes, too, is often a guide to the existence of eye-strain, and so is frequent blinking, with or without slight facial contortions, liable to be mistaken for chorea, of which something will be said later.

Apart from these considerations, the cardinal diagnostic point is that pain, whatever its exact site and nature, is brought on (or, at least, rendered worse) by using the eyes, it may be, for reading or, especially in the case of muscular errors, for distance. That those who suffer from ocular headache sometimes suffer also from disordered general health cannot be looked upon as extraordinary. Such complaints as insomnia, confusion of thought, inability to fix the attention, irritability of temper, and gastric disturbance are not rare, and those symptoms, like the headache, may often be relieved by suitable glasses.

Insomnia was cited a good many years ago as a symptom of astigmatism by Mr. H. B. Hewetson of Leeds.[14] He quoted a case where the eyes had given much trouble during the examinational period of an Oxford man's life. After astigmatism was corrected with glasses, with an equal amount of work, the insomnia disappeared, and the whole physical and nervous state of the patient improved greatly. Dr. Ambrose L. Ranney,[15] an American physician with leanings towards ophthalmology, has quoted illustrative cases, some of a striking nature. The late Mr. Simeon Snell[16] spoke of insomnia as a frequent manifestation of eye-strain, and commented upon the fact that natural sleep speedily returned when relief had been afforded to the over-taxed eyes by correcting glasses. Indeed, cases of this sort must be familiar to every ophthalmic surgeon, and I have myself notes of quite a number. A similar remark applies to irritability of temper, confusion of thought, and nausea after use of the eyes. It is sometimes astonishing to see the improvement in temper and general health that follows the correction of even low degrees of hyperopic astigmatism, especially in children. I may say that, in my opinion, a physician who attempts to treat a patient for chronic headache without first making a careful examination of the eyes fails in an elementary duty.

That migraine is often closely associated with ocular defects is no new observation, since the connexion was recognised by Piorry[17] 75 years ago, and since then has been commented on by many writers, including Airy, Liveing, Ranney, Hewetson, Lauder Brunton, Stevens, Gould, Clarke, and Snell. Indeed, in 1882 Dr. Savage[18] of Jackson, U.S.A., announced that he had discovered the "real cause" (*sic*) of sick headache to be hypermetropia and astigmatism, and consequently that its successful treatment lay in the use of proper glasses. A few years later our own countryman, Mr. H. B. Hewetson[19] laid stress upon the fact that correction of the eyes by cylindrical glasses relieved not only the headache but also the intermediate dyspepsia, insomnia, and irritability of temper liable to occur in some patients between the attacks of megrim. In the following year Dr. Ambrose L. Ranney[20] stated that "the symptoms of sick headache are reflex in character to a large extent, and due primarily in almost every case to some optical defect"; and, again, in 1892 he said that he had yet to encounter a typical sick headache not associated with eye-strain.

Nowadays, few would probably care to go so far in their

[9] S. Weir Mitchell: Medical and Surgical Reporter, July 25th and August 1st, 1874.

[10] Ibid., Feb. 6th, 1875.

[11] R. Brudenell Carter: Transactions of the Clinical Society of London, vol. viii., 1875, p. 12.

[12] Weir Mitchell: American Journal of the Medical Sciences, vol. lxxi., 1876, p. 363.

[13] J. Hughlings Jackson: THE LANCET, May 12th, 1877, p. 674.

[14] H. B. Hewetson: Brit. Med. Jour., Nov. 10th, 1888.

[15] Ambrose L. Ranney: New York Medical Journal, March 28th, 1891, and June 11th, 1892.

[16] Simeon Snell: Eye-strain as a Cause of Headache and other Neuroses. London, 1904.

[17] Piorry: quoted by E. Liveing On Megrim, Sick Headache, and Some Allied Disorders. London, 1873, p. 54.

[18] Savage: Medical and Surgical Reporter, July 29th, 1882.

[19] Hewetson, H. B.: Medical Times and Gazette, March 21st, 1885.

[20] Ambrose L. Ranney: New York Medical Journal, June 18th, 1892.

statements as Dr. Savage and Dr. Ranney,[21] although every experienced ophthalmic surgeon knows that many cases of migraine are closely connected with eye-strain. Speaking for myself, I could quote case after case of the relief or cure of migraine by the use of spectacles, but I shall content myself by placing on record my conviction that, as a matter of routine practice, the eyes should be examined in every case of sick-headache. In children it appears that migraine may be replaced by bouts of vomiting, as I have pointed out elsewhere,[22] and that some of these cases yield to the correction of associated ametropia. The following is a case in point: A boy, 8 years of age, had been subject for six years to fits of violent and prolonged vomiting, which came on every fortnight or so. The attacks generally supervened at 5 or 6 o'clock A.M., and lasted, as a rule, the entire day, but on occasion they had been known to persist for as long as three days. The emesis occurred independently of food, and the vomited matters consisted mainly of "frothy, white water." On close questioning the lad stated that now and then the vomiting was preceded by headache, although usually the former occurred alone. The patient's mother, maternal grandfather, and a maternal aunt all suffered from ordinary sick headache. The lad's sight was equal to one-half normal, and relief followed the constant use of correcting glasses. In some of these patients vomiting is replaced after the advent of puberty by migraine of a more or less typical description. What connexion, if any, such cases have with the curious condition known as "cyclic vomiting" in children, believed by some to be due to acetonæmia, would be an interesting subject for inquiry. There are certainly points of resemblance between the two.

Vertigo as a consequence of eye-strain is a symptom that is more likely to take a patient to a general physician than to an ophthalmic surgeon. That it occurs is undoubted. It appears to be more common in women than in men. I can recall some striking instances of its cure by the correction of astigmia and especially of vertical deviations of the eyeball, hyperphoria. Thus, a gentleman occupying an important judicial position was so tormented with giddiness that he entertained serious thoughts of resigning his office. The symptom was entirely relieved by correcting the hyperopic astigmia and anisometropia from which he suffered. Mr. C. E. Pronger[23] mentions a very similar case. The patient developed curious attacks of giddiness which came on when awakening from sleep and produced an unconscious condition that lasted for about 15 minutes and that was followed by a violent headache. Bromides, suggested by a London specialist, availed nothing. The result of glasses, however, was most satisfactory.

Most of the remaining effects of uncompensated eye-strain may be grouped as neuroses—that is to say, as nervous affections of a functional nature. One phase of the functional neurosis known as "habit-spasm" is commonly caused by ocular strain. It is liable to be confused with chorea, a point that doubtless accounts for some of the cases of so-called "chorea" stated to have been cured by glasses. Habit-spasm occurs chiefly in sparse and nervous children from 5 to 12 years, and usually shows itself by jerking movements of the eyelids, often accompanied by a drawing-up of the angle of the mouth. Less frequent symptoms are a trick of suddenly turning the eyes upwards or downwards, or of closing one eye. These signs often make up the sum-total of the ailment, but there may be convulsive movements of the tip of the nose, the forehead, shoulders, arms, hands, or legs, or a tendency to make uncouth noises. In many cases, more especially those in which blinking is the chief symptom, the correction of even a trifling error of refraction will check the "tic," as the condition is sometimes called. Atropine dropped into the eyes has sometimes the same effect. Elsewhere[24] I have reported a series of these cases, and in doing so I laid stress upon four points, which I venture to repeat in this place. They are as follows: (1) Such children seldom complain of eye-strain, an omission that is likely to mislead the practitioner; (2) their sight is usually good; (3) no dependence whatever should be attached to an estimation of refraction unless the eyes at the moment of examination are fully under the influence of atropine; and (4) the ametropia should be corrected almost fully by glasses to be worn for every purpose.

[21] Ibid., Feb. 27th, 1886.
[22] Sydney Stephenson: Medical Press and Circular, April 18th, 1906.
[23] Quoted by George M. Gould: Biographic Clinics, vol. iii., 1905, p. 191.
[24] Sydney Stephenson: Brit. Med. Jour., Sept. 18th, 1909, p. 751.

The following case appears to support the claim recently made by Mr. R. W. Doyne[25]—namely, that polyuria may be a manifestation of eye-strain. A thin and nervous man, aged 35 years, consulted me on account of painful eyes, which when bad were accompanied by nausea and followed by the passage of large amounts of pale urine. The condition had been present for five or six years. The full correction of compound myopic astigmatism (*minus* 1·0 D. sph. with *minus* 1·5 D. cyl. axis 80°) by spectacles for constant wear was speedily followed by loss of the headache and eventually of the polyuria. The patient himself was convinced that the glasses were responsible for his cure, although it is obviously impossible to exclude the influence of suggestion.

When we come to epilepsy and its relationship to eye-strain we enter upon debateable ground. That the characteristic convulsions may result from abnormal conditions of the eye has been warmly affirmed and hotly denied. Although I can make no personal contribution to the discussion, I can at least briefly describe the experiences of some other observers, and ask my hearers to draw their own conclusions as to the reality of the connexion. In 1887 Dr. Stevens and Dr. Ranney reported cases of epilepsy cured by glasses or by operations upon the external eye muscles. Somewhat later Dr. Wendell Reber[26] of Philadelphia described several instances of the same disease cured by glasses. Dr. George M. Gould[27] gave particulars of six such patients cured by glasses, and other American writers, as G. H. Thomas, Samuel Theobald, Myles Standish, Zimmerman, Gallaher, Semple, and Hubbell, have reported that in their experience epileptic attacks are either cured or reduced in number by the provision of proper glasses.

Opposing evidence was furnished by the commission appointed in 1887 by the New York Neurological Society to examine the claim made by Dr. George T. Stevens—namely, that ocular disturbances were "among the most prolific sources of nervous disturbances, and more frequently than other conditions, constitute a neuropathic tendency." After having investigated nine test cases, the commission reported that no single instance could be cited in which the cure of genuine epilepsy had followed correction of refractive or muscular errors of the eye. Of the cases three were improved, five remained without improvement, and, finally, in one the result was unknown. In view of these facts, the commission expressed the view that the method did not afford a sufficient degree of relief to patients to warrant its adoption or recommendation as a means of cure or as the sole therapeutic measure. Dr. Stevens[28] replied by alleging bad faith on the part of the commission, which, in addition to himself, included two members of his own nomination. He furthermore spoke of the report as "*ex parte* and objectionable in spirit and motive." Dr. Gould[29] dismisses the findings of the Stevens Commission with these contemptuous words: "One may summarise the results of this commission as being, perhaps, as worthless as the reports criticised."

Dr. William P. Spratling[30] has given an account of experiments carried out at the Craig Colony of Epileptics, Sonyea, New York—an institution of which he is the medical superintendent. Sixty-eight patients (mostly young or middle-aged adults) were selected for experiment—a number that included 35 men and 33 women. Attacks were tabulated for a period of three months previous to the use of correcting glasses, and again for periods of three, six, and 12 months after their employment. The ocular examinations (conducted under homatropine and cocaine) were carried out by Dr. George M. Gould, assisted by Dr. Arthur J. Bennett of Buffalo. The glasses were prescribed by Dr. Gould, and with few exceptions were worn from Sept. 1st, 1902, to Sept. 1st, 1903. The results obtained in 66 of the cases were as follows: (1) In one case there was an arrest of the attacks and cure seemed probable; (2) in 11 cases there was an apparent decrease in the attacks; (3) in 16 cases there was no change; and (4) in 33 cases the attacks increased.

The validity of the Craig Colony experiment has been

[25] R. W. Doyne: Brit. Med. Jour., August 13th, 1910.
[26] Wendell Reber: Pennsylvania State Journal, 1902.
[27] George M. Gould: American Medicine, July 15th, 1902; Journal of Mental and Nervous Diseases, November, 1889.
[28] Stevens: Journal of Mental and Nervous Diseases, 1889, p. 690.
[29] George M. Gould: Biographic Clinics, vol. iv., 1906, p. 355.
[30] William P. Spratling: American Medicine, April 9th, 1904. According to a later communication by Dr. Spratling (New York Medical Journal, Sept. 16th, 1905), the seizures in this patient recurred

challenged by Dr. Gould, who speaks of "the confused and untrustworthy statistics of the official report," and criticises the absence of a resident oculist or optician to supervise the after-treatment of the cases. To quote his own curious words, Dr. Gould thinks he should have excluded from the list "the old hopeless patients, those on the verge of the grave, and hence incapable of convulsions after death." A bit of interesting evidence has been furnished by Dr. Hodskins and Dr. Moore,[31] who kept the eyes of 88 epileptics under the influence of atropine for a month. For the atropine months the seizures averaged 12·6 per patient, as compared with 13·2 for the average month. The authors firmly "believe that the rôle played by ocular defects in the causation of epilepsy is a very modest one." Finally, Dr. B. Sachs[32] does not know "of a single case in which epileptiform seizures have been altogether inhibited or even diminished in number by the wearing of glasses, by the cutting of muscles, or by any other ocular measures which have been adopted."

In our own country the ocular origin of some cases of epilepsy has been endorsed by several writers. To Mr. H. Work Dodd[33] we are indebted for a most important contribution dealing with the treatment by glasses of 100 consecutive cases of epilepsy at the West End Hospital for Nervous Diseases and Paralysis, London. All but three of the patients were examined with the eyes under the influence of a cycloplegic (atropine or homatropine). Into the carefully tabulated results we need not enter here. It is of more importance for our present purpose to note that 52 of the patients were ordered to wear glasses, and of that number 13 developed no fits during periods that varied from 4 to 12 months. In 36 other patients the condition was improved under glasses and three patients remained *in statu quo*. In reference to these somewhat striking figures, it is to be remarked that the usual medical treatment appears to have been continued in all the cases.

Mr. C. Ernest Pronger[34] makes the statement that in true epilepsy and in *petit mal* "some error of refraction is very commonly present and that the correction of it tends unmistakeably in my opinion to mitigate both the intensity and frequency of the attacks." This view amounts to little more than a pious expression of opinion and calls for no comment. But Mr. N. Bishop Harman[35] relates the case of a young lady subject to fits which "tallied well with the picture of epilepsy, save in one point—that consciousness was not lost," who experienced no further attacks after glasses had been prescribed for the hyperopic astigmia and anisometropia that were present in the case. It is unfortunate that in Mr. Harman's patient one essential of epilepsy—namely, loss of consciousness—was absent. Finally, Mr. Ernest Clarke[36] takes up the position that "the removal of eye-strain does not, in the strict sense of the word, cure epilepsy any more than it cures a headache, but by removing the eye-strain we remove one of the causes, and frequently the only cause, that determines an attack." Few will be found to join issue with this eminently reasonable proposition.

All things considered, I cannot help thinking that there is a case for further investigation into the relationship between eye-strain and epilepsy. In any such investigation it is to be hoped that three precautions will be adopted: (1) to make sure that the disease is true epilepsy and not a mere hysteroid convulsion; (2) to treat the patient by glasses alone; and (3) to observe the case not for weeks but for years.

In his famous "Biographic Clinics" Dr. George M. Gould, now of Ithaca, has shown with more or less likelihood that the "irritability," "nervousness," and general ill-health of some of our greatest writers and thinkers was the functional result of undetected eye-strain. Dr. Gould's list includes such names as those of de Quincey, Carlyle, Darwin, Huxley, Taine, Browning, Wagner, Balzac, Whittier, Flaubert, Spencer, Hearn, Chaikovsky, and Nietzsche. It cannot, indeed, be doubted that in some neuropathic individuals (the class from which great writers are mainly recruited) the eyes are accountable for a host of troubles, which range from "nervous breakdowns," mental apprehension, and agoraphobia, on the one hand, to the manifestations of neurasthenia or of actual mental disorder, on the other. At the same time such cases (which are far from common in my experience) occur only in nervous, highly-strung individuals. Dr. Samuel D. Risley[37] has recently pointed out that the ocular defects present in these psychoses are precisely those which are frequent in other patients, and he has laid particular stress on the fact that for the production of the symptoms another factor is essential—namely, an unstable nervous system, inherited or acquired. Again, there is always the influence of "suggestion" to be thought of. It is certain that an ophthalmic surgeon deeply imbued with a belief in the efficacy of glasses will do more with this particular class of patient than his equally competent brother whose enthusiasm is perchance tempered with a calmer judgment. Indeed, all things are possible to the eye of faith. But the hard fact remains that relief can be given to a certain number of these patients by careful attention to the eyes, a point that in my opinion merits more attention from the practising physicians than it has yet received, especially in this country and on the continent of Europe.

An example of a minor psychosis due to the eyes is well exemplified in a case related by Sir Lauder Brunton.[38] A patient consulted that distinguished physician complaining that he was losing his head. He had a large business, and whenever he sat down to his account books he could manage pretty well for five minutes, and then (he said) everything seemed to go round and he could not add two and two together. This patient's eyes were presbyopic, and his symptoms speedily yielded to a pair of spectacles. A case recently published by Dr. Wendell Reber[39] is even more striking. A girl, aged 25 years, suffered from dull occipital headache, and after reading and sewing, from vertigo and nausea, with a feeling "as though her head would burst." She became morose and depressed and began to fear she was losing her mental balance. She was distressingly thin, poorly nourished, and markedly neurasthenic. After correction of her hyperopic astigmatism by glasses she gained 18 pounds in six months and lost all her symptoms.

To the foregoing I may be permitted to add one or two illustrative cases that have come under my notice. The first is one of agoraphobia definitely cured by glasses. A woman, aged 30 years, who had always been subject to "blind headaches," complained that for the last 18 months she had become giddy on turning a corner or on passing into the light. During the last six months she had gradually developed a fear of open spaces. This symptom had become so marked that she was now unable to cross even an ordinary street, but if accompanied by a friend the feeling of fear was slight. In the right eye there was slight hyperopic astigmia, and in the left slight hyperopia. A prism of ½ D. base out was required to produce fusion of distant objects. In the first four months, during which glasses were worn constantly, the giddiness and agoraphobia were entirely lost. Glasses were then used for reading alone, and there was a return of the symptoms, which again disappeared when they were worn constantly. In 1906 the lady suffered from pain behind the sternum ("inward neuralgia" was the diagnosis of her physician) for six months, during which period she had two slight attacks of agoraphobia, but no return of vertigo. With that exception the patient, who has been under observation since October, 1905, has remained free from any anxiety when crossing open spaces, no matter how wide.

The second case is one of periodic attacks of nausea, vertigo, and retching, lasting with intermissions for several hours, and sometimes followed by intense headache persisting for 24 hours. The attacks, which always began at night when the patient was in bed, had been present for about six years, and were getting worse when I saw the case in 1907. The patient, a man, aged 38 years, was in a highly nervous state, incapable of work, and apprehensive of all kinds of impending misfortune. Glasses prescribed in South Africa had done no good. A London physician had suggested that the underlying condition might be one of obscure intracranial mischief. Briefly, there was hyperopic astigmia against the rule, with a considerable difference between the

[31] Hodskin and Moore; Journal of Ophthalmology and Oto-laryngology, May, 1908.
[32] B. Sachs: Medical News, July 30th, 1904.
[33] H. Work Dodd: Brain, xvi., 1893, p. 534.
[34] C. Ernest Pronger: Slight Errors of Refraction and their Influence on the Nervous System, Harrogate, 1903.
[35] N. Bishop Harman: Medical Press and Circular, Nov. 18th, 1903.
[36] Ernest Clarke: Clinical Journal, March 2nd, 1910.
[37] Samuel D. Risley: Pennsylvania Medical Journal, February, 1910.
[38] Sir Lauder Brunton: On Disorders of Assimilation, Digestion, &c., London, 1904, p. 322.
[39] Wendell Reber: The Ophthalmoscope, December, 1910.

two eyes, and complete recovery of health followed the constant use of glasses which corrected the refractive error almost completely.

There would be little difficulty in multiplying such cases as the foregoing, but enough have been given to show the importance of examining the eyes in these curious psychoses. If this be done we shall sometimes succeed in ridding patients from distressing symptoms but little under the influence of ordinary remedies.

The manifestations that in my personal experience uncompensated asthenopia may produce have now been described, but in that of others the list is by no means exhausted. Many other conditions have been assigned to the same cause, although not always, I think, upon adequate evidence. Among these conditions may be mentioned dysmenorrhœa (A. Doran F. Hare), tachycardia (de Schweinitz), sleepiness (Doyne), enuresis (Gould, A. H. Fardon), sea-sickness (Pronger), night terrors (de Schweinitz), constipation (L. Williams), tinnitus (Theobald), Ménière's disease (F. P. Lewis), dermatitis (T. H. Butler), sinusitis (W. L. Phillips), appendicitis (R. T. Morris), and pre-tuberculosis (F. P. Lewis), to say nothing of head-tilting and spinal curvature, and, more startling still, of the drug habit, crime, insanity, and suicide. Some of these suggestions seem more than a little far-fetched.

THE SPECIFIC DIAGNOSIS OF PULMONARY TUBERCULOSIS.[1]

BY A. C. INMAN, M.A., M.B. OXON.,
SUPERINTENDENT OF THE LABORATORIES OF THE BROMPTON HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST.

THE diagnosis of early pulmonary tuberculosis is so important, both from the point of view of the physician who is asked to express an opinion and of the patient who asks for this opinion, that a review of the recent methods which may conduce to an accurate diagnosis of this disease is worthy of careful consideration. It must be understood that what we are striving to obtain is a method, or combination of methods, which will specify tuberculosis of the lungs which calls for treatment. The tubercle bacillus is ubiquitous and all-invading, but fortunately for the human race not all-conquering. The classical investigations of Nägeli have clearly shown that practically all individuals over 30 years of age have been brought into conflict with this bacterium. I am convinced that the ultimate results of all the scientific work which is being devoted to the study of pulmonary tuberculosis will go far to explain the methods of natural cure which takes place in many cases, and will expose the effects on the animal economy to which such an invasion inevitably leads.

A generation has hardly passed since Koch, whose death the scientific world still mourns, conclusively proved that the bacillus tuberculosis which he described is the sole cause of tuberculosis. The presence of this bacillus in any focus of disease or in the output of any such focus is recognised as irrefutable proof of the tuberculous nature of the disease.

The presence of tubercle bacilli in the sputum is absolutely diagnostic of pulmonary tuberculosis if primary disease of the upper air-passages, which is very rare, can be excluded. It follows that as regards the diagnosis of pulmonary tuberculosis the examination of the sputum for tubercle bacilli is of the first importance. Such an examination is now universally practised as a routine method, and yet there are considerations which, though not generally recognised, are worthy of attention in this connexion. It is important to examine carefully whenever possible the early morning expectoration—that is to say, the first sputum expectorated after the night's sleep. Careful search of such a specimen has often been rewarded by a positive result after numerous negative examinations of specimens collected at random during the day-time. For routine examinations the sputum supplied should be spread out on a piece of glass against a dark background and carefully searched for yellow purulent foci, from which films are made. These are dried by agitation in the air or by subjection to moderate heat and stained by the Ziehl-Neelsen method (warm carbol-fuchsin, which should not be heated to ebullition, decolourised with 25 per cent. sulphuric acid, and counter-stained with 1 per cent. aqueous methylene blue). A single negative examination is quite inconclusive, for which reason the routine adopted at this hospital has been to examine three specimens collected on separate days in all doubtful cases.

Carl Spengler (1) has advocated the use of picric acid as a mordant for the fuchsin in addition to the carbolic acid, and in this way claims to have demonstrated tubercle bacilli in sputa in which their presence was not revealed by the Ziehl-Neelsen method.

Method.—Stain films with carbol-fuchsin. Pour off the stain and add picric acid-alcohol for 2-3 minutes. Wash with 60 per cent. alcohol, add 3-4 drops of 15 per cent. nitric acid, wash with 60 per cent. alcohol, and counter-stain with picric acid-alcohol until the films are coloured yellow. Wash and dry.

Mr. R. C. Styles, F.I.C., has carefully investigated this method in the Brompton Hospital Laboratory, and was unable to demonstrate tubercle bacilli in any specimens of sputum in which no tubercle bacilli had been found by the routine method. He showed, however, that in nearly all cases more tubercle bacilli were demonstrable by this procedure than by the Ziehl-Neelsen method.

By the above methods only part of the sputum supplied is examined microscopically. In the event of three searches proving negative the whole quantity of sputum available should be examined by one of the methods of concentration. For this purpose the older manners of proceeding—such as homogenisation with caustic potash, or agitation in carbolic acid, subsequent spinning in the centrifuge, and examination of the deposit—have been superseded by the following improvements in technique.

1. The ligroin method of Lange and Nitsche (2).

Place 5 c.c. of sputum in a conical flask and add 50 c.c. of caustic potash (5 per cent.). Shake vigorously and allow the mixture to remain at room temperature until the sputum is thoroughly homogenised. Dilute with 50 c.c. of tap water and shake again. Then add 2 c.c. of ligroin and shake vigorously until a thick emulsion is produced. Warm the mixture to 60° C. until distinct separation of the hydrocarbon occurs as evidenced by effervescence and the formation of a superficial layer of small bubbles. A number of drops are then taken from immediately below this superficial layer with a platinum loop and placed on a warm slide. The dry film is then fixed with a saturated solution of perchloride of mercury and stained by the Ziehl-Neelsen method.

Ligroin is petroleum ether obtained by the fractional distillation of petroleum. Mr. Styles also investigated the utility of this method and was able to demonstrate tubercle bacilli in four cases from 50 samples of sputum which had yielded a negative result with the routine method.

2. The antiformin method of Uhlenhuth and Xylander (3).

The sputum is homogenised with 15 per cent. antiformin (a mixture of equal parts of sodium hypochlorite and sodium hydrate, obtainable from Oskar Kühn, Berlin). The mixture is sedimented in a high revolution centrifuge. After decanting the supernatant fluid the deposit is washed in physiological salt solution and again centrifuged. Films are then made from the resulting deposit, dried, fixed in perchloride of mercury, and stained by the Ziehl-Neelsen method.

This procedure is quick and very effective. It needs but a short acquaintance with it to be convinced of its superiority over other methods.

3. Loeffler (4) has recently suggested an ingenious modification of the antiformin method which is worthy of mention. Availing himself of the high specific gravity of chloroform (sp. gr. 1497) his modification is as follows:—

To 5-20 c.c. of sputum is added an equal quantity of 50 per cent. antiformin. The mixture is heated until a clear liquid results. To 10 c.c. of this mixture is added a 10 per cent. solution of chloroform in alcohol (5 c.c. generally suffice). After thorough shaking the fluid is centrifuged for 15 minutes. An opaque layer is then found to exist between the chloroform which occupies the bottom of the centrifuge and the supernatant fluid. The latter is pipetted off and the intermediate opaque layer removed wholly on to a slide. Films are made, dried, fixed, and stained.

The method yields excellent results, is rapid, and simple. When employing any of the above concentration methods it must be borne in mind that living virulent bacilli are being dealt with and precautionary methods of disinfection of the hands, test-tubes, and instruments used must be adopted.

Rosenberger (5) startled the medical world by announcing that he had found tubercle bacilli in the circulating blood of the majority of consumptive patients even in the earliest stages of the disease. The positive results of this observer have not, however, been confirmed by the majority of workers on this subject. Lippmann (6), taking 10 c.c. of blood from the patient and adding to it 30 c.c. of acetic acid (3 per cent.), made an emulsion of the deposit produced by centrifuging this mixture. To the emulsion he added 60 c.c. of antiformin (15 per cent.), incubated it for one hour at 37° C., and then sedimented the solid particles by centrifuging. In films from the deposit he found tubercle bacilli in the following percentage of cases with reference to the stage of disease:—Third stage, in 53 per cent. of cases;

[1] Founded on a lecture delivered at the Brompton Hospital on Nov. 9th, 1910.

second stage, in 33 per cent. of cases; and first stage, in 0 per cent. of cases (one case).

Schnitter (7), examining the blood of 34 cases of tuberculosis, found tubercle bacilli in 10 cases. He agrees with Liebermeister that the presence of tubercle bacilli in the blood implies a grave prognosis and suggests impending death. His cases were divided as follows:—

	No. of cases.	T.B. in blood.	
Third stage	17	8	47 per cent.
Second stage	9	2	22 ,,
First stage	8	0	0 ,,

Ravenal and Smith (8) were unable to find tubercle bacilli in the blood of 18 cases of tuberculosis examined.

Jessen and Lydia Rabinowitsch (9) found tubercle bacilli in the blood of 12 cases of third stage in 5 cases (Much's granules in 1 case); 12 cases of second stage in 0 cases (Much's granules in 2 cases); and 12 cases of first stage in 2 cases.

Hunt (10) examined the blood of 20 patients for tubercle bacilli. Of these, 13 had tubercle bacilli in the sputum, one had been diagnosed as tuberculous peritonitis, one as tuberculous laryngitis, and five were under suspicion of being tuberculous. Of smears made from the blood of 19 patients, 15 gave negative results as regards acid-fast bacilli. Of the remaining four bloods (two from cases with tubercle bacilli in the sputum, one case diagnosed as tuberculous peritonitis, the other suspected to be tuberculous), in one the films were only decolourised with 2½ per cent. sulphuric acid, in two the acid-fast bacilli were morphologically unlike tubercle bacilli; whilst in one case, in which a clump of bacilli resembling the tubercle bacillus was found, the inoculation into a guinea-pig of the remainder of the blood did not produce tuberculosis. Eleven guinea-pigs were inoculated with the blood from ten cases. At the necropsies performed on these animals after a natural or unnatural death, no evidence of tuberculosis was detected in any of them. Dr. MacNalty is at present investigating this subject at the Brompton Hospital, and I am permitted to say that so far his results cannot confirm those of Rosenberger.

Latterly, attention has been paid to the examination of the fæces for tubercle bacilli. The antiformin method is especially suited to such examinations.

Method.—A portion of fæces, about 1 cubic inch, is placed in 20 c.c. of antiformin (15 per cent.). By means of a glass rod the fæcal mass can be easily broken up and a coarse emulsion produced. Another 20 c.c. of antiformin is added to the emulsion, the vessel employed is closed, and the mixture is allowed to stand for two hours. At the end of this time a creamy sediment is seen to have collected at the bottom of the vessel. Some of this layer is removed with a pipette, films are prepared with it, dried, fixed with perchloride of mercury, and stained by the Ziehl-Neelsen method. Decolourisation may be practised with alcohol (60 per cent.) in addition to the sulphuric acid (25 per cent.).

Rosenberger and Willson (11) have stated that they found tubercle bacilli in the stools of 100 tuberculous patients and of 21·5 per cent. of clinically healthy persons.

Klose (12) claims to have found tubercle bacilli in the fæces of every case of pulmonary tuberculosis in which tubercle bacilli were present in the sputum.

Philip and Porter (13) examined 109 specimens of fæces. Of these, 99 were clinically cases of pulmonary tuberculosis, 34 had tubercle bacilli in the sputum, 42 had sputum in which no tubercle bacilli had been discovered, and 24 had no sputum at all. "Of the tuberculous patients, all those with bacilli in their expectoration, with one exception, presented tubercle bacilli in the fæces. In the 42 cases in which the bacillary examination of the sputum was negative 29 gave tubercle bacilli in the fæces. Of the 24 cases without sputum, 17 showed bacilli in the stools. Of nine specimens from presumably normal subjects none yielded tubercle bacilli."

Alexander (14), having determined the dose of human fæces tolerated on injection by guinea-pigs, tried in this way to infect guinea-pigs with the fæces of tuberculous patients. In all he injected into guinea-pigs the fæces of 24 tuberculous subjects. 23 guinea-pigs died as a result of the injection of samples of fæces all of which had shown the presence of acid-fast bacilli microscopically. The twenty-fourth sample of fæces showed no tubercle bacilli at the time of the experiment, but acid-fast bacilli were demonstrated in the stools of the patient from whom this sample had been obtained after a purgative had been administered. 129 samples of fæces examined by the same observer from subjects clinically non-tuberculous revealed no tubercle bacilli microscopically.

These results suggest the applicability of this method of recovering tubercle bacilli to the diagnosis of early pulmonary tuberculosis. In conjunction with Dr. Cecil Clarke I have commenced a systematic investigation into the presence of tubercle bacilli in the fæces of clinically tuberculous, doubtfully tuberculous, and non-tuberculous patients at the Brompton Hospital. The investigation is only in an initial stage, but has so far given the following results:—

Investigation as to the Presence of Tubercle Bacilli in the Fæces of 26 Adults.

No.	Sputum.	Fæces.	Disease.
1	T.B. +	T.B. +	C.P.T., active, advanced.
2	T.B. 0 (3*)	T.B. 0	C.P.T., quiescent, early.
3	T.B. 0 (2)	T.B. 0	? tuberculous glands of abdomen.
4	T.B. 0 (3)	T.B. 0	C.P.T., afebrile, quiescent.
5	T.B. 0 (3)	T.B. 0	? C.P.T., afebrile.
6	T.B. 0 (4†)	T.B. 0	C.P.T., 3 lobes, moderate fever.
7	T.B. 0 (3)	T.B. 0	? C.P.T., afebrile.
8	T.B. +	T.B. +	C.P.T., 3 lobes, tuberculous larynx.
9	T.B. +	T.B. +	C.P.T., 4 lobes, afebrile.
10	T.B. +	T.B. +	C.P.T., febrile, advanced.
11	T.B. +	T.B. +	C.P.T., no physical signs of disease, afebrile.
12	T.B. +	T.B. 0	C.P.T., 3 lobes, afebrile.
13	T.B. +	T.B. +	,, 2 ,, ,,
14	T.B. +	T.B. +	C.P.T., early.
15	T.B. +	T.B. +	C.P.T., 3 lobes, febrile.
16	T.B. 0 (3)	T.B. 0	,, 2 ,, afebrile.
17	T.B. +	T.B. +	,, 5 ,, ,,
18	T.B. +	T.B. +	,, 4 ,, ,,
19	T.B. +	T.B. +	,, 3 ,, ,,
20	T.B. +	T.B. +	,, 4 ,, febrile.
21	T.B. +	T.B. +	,, 4 ,, ,,
22	T.B. +	T.B. +	,, 3 ,, ,,
23	T.B. +	T.B. +	,, 2 ,, afebrile.
24	T.B. 0 (6†)	T.B. +	,, 2 ,, ,,
25	T.B. +	T.B. 0	,, 3 ,, ,,
26	T.B. +	T.B. +	,, 3 ,, ,,

* The figure in each instance indicates the number of examinations.
† The antiformin method was employed.

Thus of 26 adults 18 had tubercle bacilli in the sputum; and of these 16 had tubercle bacilli in the fæces; and in 2 cases the examinations of the fæces gave a negative result. 8 of the patients examined had no tubercle bacilli in the sputum, and of these 7 had none in the fæces, whilst in 1 case (C.P.T., 2 lobes, afebrile) tubercle bacilli were found in the fæces. These results suggest that the appearance of tubercle bacilli in the stools of early cases of pulmonary tuberculosis, and in the absence of intestinal tuberculosis, results from the swallowing of sputum secreted in an open tuberculous focus in the lungs.

Dr. M. S. Paterson, the superintendent of the Brompton Sanatorium at Frimley, informs me that many patients have told him that it is practically impossible, however good the intention may be, not to swallow some sputum during the course of the day if this exists in any quantity. The method suggests itself as particularly useful in the investigation of children, who commonly swallow their sputum. Our available material is very limited at the Brompton Hospital, where there are but few children's beds. We have so far examined the fæces of seven children with the following results:—

Investigation as to the Presence of Tubercle Bacilli in the Fæces of 7 Children.

No.	Age.	Sputum	Fæces.	Provisional diagnosis.
1	9 years.	–	T.B. +	C.P.T., 2 lobes, febrile.
2	7½ ,,	–	T.B. 0	No physical signs of disease.
3	2½ ,,	–	T.B. 0	? C.P.T., afebrile.
4	6 ,,	T.B. +	T.B. 0	C.P.T., 2 lobes, febrile.
5	7 ,,	–	T.B. 0	C.P.T., 3 lobes, febrile.
6	4 ,,	–	T.B. 0	C.P.T., 2 lobes, febrile, v. Pirquet positive.
7	5 ,,	–	T.B. 0	Fibrosis—? C.P.T., v. Pirquet positive.

These results are too few to admit of any conclusion being drawn from them.

If tubercle bacilli are not demonstrable in the sputum, the blood, or the fæces, inferential diagnosis must be relied upon. A number of methods have been advocated for this purpose.

1. *Von Pirquet's cutaneous reaction.*—This consists in scarifying the arm and placing on the scarified spot two drops of the concentrated old tuberculin of Koch. A positive reaction, which consists of the formation of a red papule at the site of scarification, appears at the earliest within three hours, but may not do so before 24 hours have elapsed. In some cases the interval is still more prolonged. This reaction is of value and is eminently specific in the case of young children, but it can only show the presence of latent tuberculosis in adults, for 70 per cent. of the apparently healthy give a positive reaction. Von Pirquet gives the following figures. Of 747 children tested there were :—

Clinically tuberculous, 130, of which 113 (87 per cent.) reacted positively.
Clinically non-tuberculous, 512, of which 104 (20 per cent.) reacted positively.
Doubtfully tuberculous, 115, of which 56 (48·6 per cent.) reacted positively.

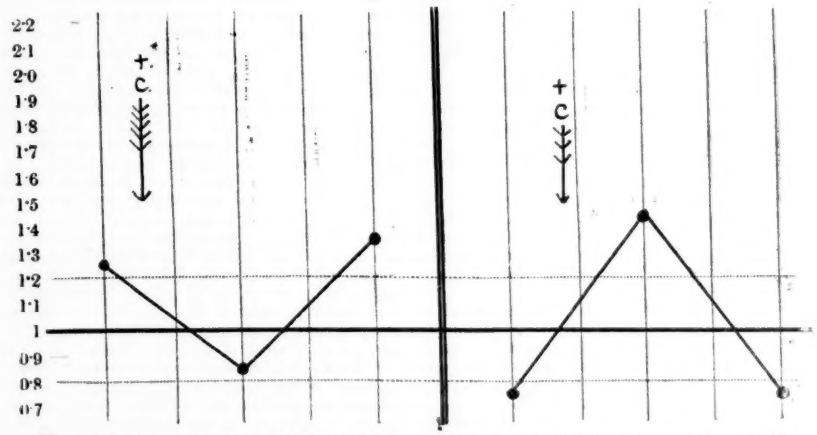
The tuberculous cases which gave a negative reaction were nearly all cachectic.

into the eye. J. Citron (16) gives the following instructive table with reference to the value of this reaction :—

—	Audéoud.	Petit.	Citron.	Eppenstein.	Schenck u. Seiffert.
Tuberculous ...	94·6	94·3	80·7	72·3	78·6
Doubtful ...	81·0	61·6	80·0	40·0	30·0
Normal	8·3	18·4	2·2	9·0	5·8
	Percentage of positive reactions using Calmette's preparation.		Percentage of positive reactions using 1 per cent. old tuberculin.		

Bandelier and Roepke (17) recommend the following as the best method of employing the ophthalmo-reaction for diagnosis: In adults place a drop of 1 per cent. old tuberculin on the conjunctiva of one eye. In the event of the reaction being negative repeat the test with the instillation of a drop of 4 per cent. old tuberculin into the other eye. These authors rightly state that if this method is used the following two facts must be borne in mind: (*a*) A positive reaction only points to the presence of a tuberculous focus in the body without giving information as to the active or inactive character of such a focus. (*b*) A negative reaction does not prove the absence of active tuberculosis.

CHART 1.



Opsonic index before and after applying the ophthalmo-reaction. C + denotes that the reaction was positive.

The older the child the less valuable becomes the reaction from a point of view of diagnosis. Von Pirquet tested apparently healthy children of all ages from one month to 15 years with the following result :—

Age.	Positive reactions.	Age.	Positive reactions.
1-6 months	0 per cent.	4- 6 years	17 per cent.
1-2 years	2 ,,	6-10 ,, ...	35 ,,
2-4 ,, ...	13 ,,	10-15 ,, ...	56 ,,

Yoshikawa (15) gives the following interesting table :—

Clinically Non-tuberculous Cases.

Age.	Number.	Positive reaction		Negative reaction.
		Marked.	Slight.	
Up to 5 years	9	1	—	8
6-10 ,, ...	8	—	—	8
11-15 ,, ...	11	1	3	7
16-20 ,, ...	17	6	5	6
21-30 ,, ...	16	6	8	2
31-40 ,, ...	21	12	8	1
Over 40 ,, ...	30	14	12	4

I have recently been asked to examine the blood for the tuberculo-opsonic index in the case of six medical men who, although apparently healthy, had given a positive cutaneous reaction, self-inflicted!

2. *The ophthalmo-reaction.*—This is best practised by the instillation of a drop of 1 per cent. old tuberculin of Koch

This reaction is absolutely contra-indicated if any eye disease is present, and even should this not be the case the degree of inflammation produced by a markedly positive reaction may be very unpleasant for the patient and not devoid of danger. Again, the reaction should not be employed if a course of tuberculin treatment has been decided on, as such a procedure is likely to light up an inflammation of the eye. Estimations of the opsonic index before and after applying this test show that even the small quantity of tuberculin employed is sufficient to cause a distinct variation in the index (Chart 1). The charts show that this variation is similar to that produced by exercise in the case of the patients at the Brompton Hospital Sanatorium at Frimley (18). Chart 2 refers to a case which came under the observation of the author. It is noticeable that the instillation of a drop of tuberculin in the eye caused a temporary rise of temperature, and that this was accompanied by a negative phase in the blood. The ophthalmo-reaction was markedly positive.

3. *The subcutaneous tuberculin test.*—The preparation used for this test is the old tuberculin of Koch, 1 c.c. of which contains 1000 mg. tuberculin. Probably the best site for inoculation is the skin of the back, close to the vertebral edge of the scapulæ. The test should only be employed on patients without fever and whose general condition is satisfactory. Obvious organic lesions of the vital

organs, recent hæmoptysis, cachexia, and fever are contra-indications. The usually adopted dosage is as follows: Initial dose, 0·0002 c.c. old tuberculin = 1/5th mg.; first increase, 0·001 c.c. old tuberculin = 1 mg.; second increase, 0·005 c.c. old tuberculin = 5 mg.; maximum dose, 0·01 c.c. old tuberculin = 10 mg.

A positive reaction is manifested by (1) a local reaction at the site of inoculation; (2) a febrile reaction; (3) a general reaction evidenced by more or less severe subjective symptoms; and (4) a focal reaction at the site of tuberculous infection (in pulmonary tuberculosis in the lung). No great importance is to be attached to the reaction at the site of inoculation. As regards the febrile reaction, one may now definitely affirm that it is not specific. The generally accepted opinion is that fever is no criterion to distinguish in any way between active and inactive tuberculosis, and merely shows that the inoculated individual is a bearer of tuberculosis.

There seems to be great divergence of opinion as to the interpretation of the febrile reaction following any given dose. Originally Koch stated that a febrile reaction produced by the injection of 10 mg. was specific, and that it was not until a dose of 25 mg. was reached that non-specific intoxication effects were produced. Since then a number of authors have cast doubt on those figures; thus, Stintzing considers 3 mg. the maximal specific dose, Beschorne places it at 5 mg., Roepke at 6 mg., Junker at 5 mg., Neumann at 5 mg., Roth-Schalz at 2·5 mg., Loewenstein and Kaufmann at 0·2 mg., von Balen at 1/100 mg., whilst others find nothing specific in the reaction at all. Latterly Gordon (19) reports on the effect of inoculating a chemically pure tuberculin (endotin), which produces no febrile reaction unless this is secondary to a focal reaction in the diseased tissues. For this reason he recommends giving up the febrile reaction as a diagnostic agent. The general reaction is to be given up for similar reasons. The focal reaction in the lungs is then the specific, and therefore valuable, sign of the tuberculin test. Sahli, Romberg, Penzoldt, Bandelier and Roepke, Meissen, Citron, among others, agree that the reaction of the subcutaneous test is a well-marked focal reaction. So that if this test is employed the lungs must be carefully examined for the appearance of crepitations, &c., and the sputum should be carefully searched for tubercle bacilli.

Consider the case of a patient on whom at some previous date the ophthalmo-reaction or the cutaneous reaction has been performed. A subsequent subcutaneous injection of tuberculin is able to light up the localised inflammation produced by the instillation of a drop of 1 per cent. tuberculin in the eye or a drop of tuberculin placed on a damaged skin, but that does not mean that the eye or the area of skin in question needs treatment. Similarly, even if a focal reaction in the lung is produced by the injection of tuberculin, it only localises the tuberculous process to the lungs. By itself it cannot indicate activity or inactivity in the focus.

It is very important that these limitations of the tuberculin diagnosis should be fully recognised. A positive ophthalmo-reaction, cutaneous tuberculin reaction, or subcutaneous tuberculin test, by itself, cannot distinguish between active and inactive tuberculosis, between tuberculosis which calls for treatment and that which does not. The only rational way of using such tests is to make them but one of the many factors which have to be taken into consideration when deciding on the important question as to the advisability or no of a course of treatment, which usually is lengthy and costly. Highly-trained clinical experience is as necessary to-day as ever it was.

Citron (20) quotes the interesting researches of Franz (21), which are worthy of consideration. This observer took 400 apparently healthy soldiers of a Bosnian regiment in 1901 and gave them all injections of Koch's old tuberculin, with a maximum dose of 0·003 c.c.; 61 per cent. of these men gave a positive reaction. Next year (1902) 100 of these soldiers were again inoculated, with the result that all those who had reacted the previous year reacted again, and in addition 14 others, making 76 per cent. altogether. 323 men were inoculated for the first time in 1902, and 68 per cent. reacted positively. This regiment is recruited from a district in which tuberculosis is rife, so Franz inoculated in a similar way a number of men of a Hungarian regiment which is recruited from a district poor in tuberculous cases, yet 38 per cent. gave a positive reaction. The same author followed out the subsequent history of the men inoculated and publishes the following interesting statistics:—

Regiment.	Date of inoculation.	Number of men inoculated.	Reaction.	During the three years service were discharged through death, ill-health, or excessive leave due to—		
				Tuberculosis.	Suspected tuberculosis.	Other diseases.
Bosnian Infantry Regiment No. 1.	1901	400	+ 245 (61%) − 155 (39%)	17 (8 deaths). 5 (4 „)	22 25	10 7 (1)
Ditto	1902	323	+ 222 (68·8%) − 101 (31·4%)	13 (6 „) 4	28 (1) 13	7 (2) 5
Infantry Regiment No. 60.	1902	279	+ 108 (38·7%) − 171 (61·3%)	4 3 (2 „)	4 5	8 12
Total ...	—	1002	+ 575 − 427	34 (14 deaths) 12 (6 „)	54 (1) 43	25 (2) 24 (1)

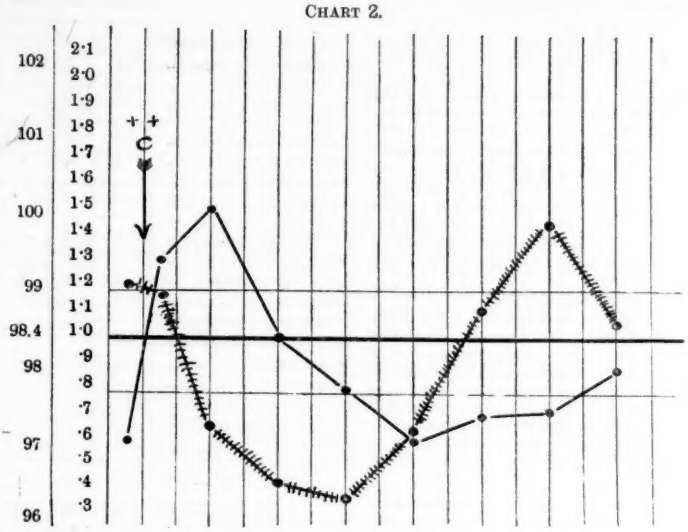
4. *Examinations of the blood serum.*—The other methods of inferential diagnosis consist in the detection of substances in the blood serum which have been elaborated by the infected organism in response to the infection. Just as specific agglutinins for the B. typhosus exist in the serum of patients suffering from typhoid fever, and for the M. melitensis in the serum of patients suffering from Malta fever, so in a certain percentage of cases are found specific agglutinins for the B. tuberculosis in the serum of patients suffering from tuberculosis. Unfortunately, the regularity with which those substances are produced and their quantity in the serum are not sufficiently great to allow of this test being applied to the early diagnosis of pulmonary tuberculosis. Again, the complement-fixing substances, which have assumed so important a rôle in the diagnosis of syphilis by means of Wassermann's test, do not appear sufficiently regularly in the serum of tuberculous patients to admit of their being applied to the diagnosis of this disease. The same applies to the precipitin test, which for a time was advocated by some of the Italian observers. Recently Izar and Ascoli (22) have attempted to apply the meiostagmin reaction to the diagnosis of pulmonary tuberculosis. The reaction consists in the reduction of surface tension which results when a serum containing antibodies and an antigen are mixed in certain proportions. The reduction of surface tension is measured by the stalagmometer of Traube. This test has not been sufficiently investigated in tuberculosis for an opinion to be expressed on its merits.

Under the heading of serum reactions comes the now familiar opsonic test devised by Sir Almroth Wright. The technique for the estimation of the opsonic index has been so often described that it need not be detailed here. It is, however, well to insist upon the advisability of conducting the whole experiment with blood the origin of which at the time in any particular case is unknown. All tests made in this hospital laboratory have been performed in this way so as to eliminate the factor of personal bias. The original work of Wright and his collaborators, and the searching experiments of Bulloch, showed that the indices of apparently healthy individuals remained constantly within certain limits. These limits have been fixed as lying between 1·20 and 0·80 on either side of unity. In the experiments in which I have been engaged for four years, the bloods of two apparently healthy individuals have been included as controls, and unless these have coincided well within the above-mentioned limits, the whole number of indices in that experiment have been discarded. The uniformity of the indices of the same control individuals, estimated almost daily over periods of months, bears testimony to the constancy of the normal limits. The technique is laborious in the extreme, but with due care can be made very accurate.

In the original experiments of Wright—which were amply confirmed by Bulloch—it was found that the characteristic opsonic index of a localised chronic tuberculous infection was low. The charts published in Sir Almroth Wright's

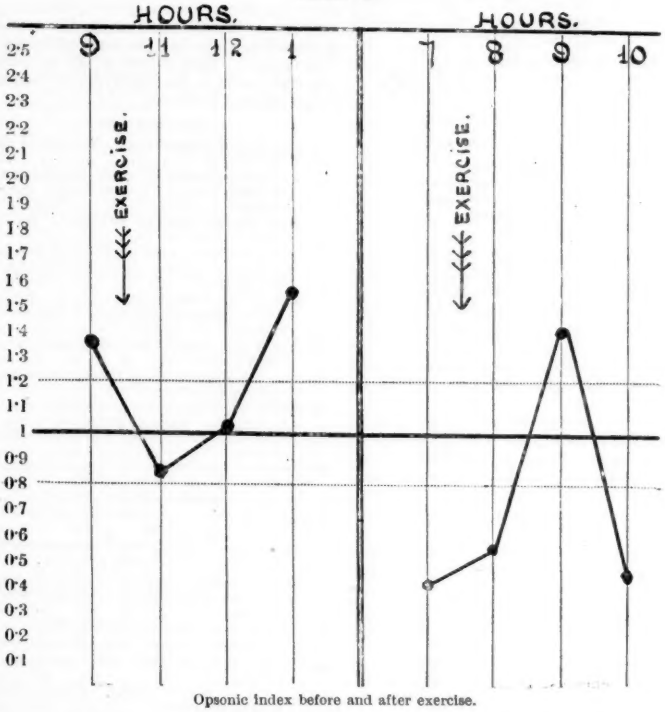
"Studies in Immunisation" (23) illustrating the effects of massage and passive congestion (Bier's hyperæmia) practised on localised tuberculous lesions, show that a rise of the opsonic index usually follows such a procedure. In dealing with a generalised infection such as active, advanced pulmonary tuberculosis, the conditions are different. The opsonic indices no longer remain low, but continuously show fluctuations above and below the normal line. If in cases of active, afebrile pulmonary tuberculosis the amount of movement indulged in by the patient is strictly supervised, it has been shown (24) that the opsonic index can be continuously maintained at a high level. If such variations from the normal occur in tuberculous, as opposed to healthy individuals, the opsonic index should prove of value in the

CHART 2.



Opsonic index (thick broken line) and temperature (thin continuous line) before and after employment of ophthalmo-reaction.
C + + denotes that the reaction was marked.

CHART 3.



Opsonic index before and after exercise.

diagnosis of the disease. It would be convenient if one single examination of the opsonic index sufficed to make a diagnosis. Unfortunately this is far from being the case. An analysis of 200 single opsonic indices taken at random, estimated on patients all of them suffering from pulmonary tuberculosis, with tubercle bacilli in their sputum, shows that 99 were outside the limits of 1·20 and 0·80, whilst 101 were within the normal. Unless the opsonic index falls well outside the normal limits no deductions should be drawn from a single observation.

Wolff and Reiter (25) found in 64 cases of tuberculosis that the opsonic index both on single examination and several examinations was low in 62 per cent. and 57 per cent. respectively. The index was raised on single examination in 25 per cent., on numerous examinations in 12 per cent. The index was never within normal limits after numerous examinations. With single examinations it was within normal limits in 8 cases, 12 per cent. Kössler and Neumann (26) found that afebrile early cases of pulmonary tuberculosis had nearly always a low opsonic index, whilst the febrile ones had a raised index.

For purposes of diagnosis at this hospital the blood is examined before and after walking exercise, the latter being in no way controlled by myself. The amount of exercise performed may be insufficient to activate the serum, but in the event of a negative index being returned the physician alone must determine whether a second estimation after increased exercise is advisable. This essential reservation was evidenced by the research at the Frimley Sanatorium. For instance, a patient who showed no fluctuation when performing Grade 2 showed a marked variation when performing the labour of Grade 3.

Reviewing as a whole the positive results of examinations of the opsonic index made with a view to diagnosis, the following four types of variation can be defined: A. An index low before, but rising after exercise. B. An index low before and after exercise (? insufficient exercise). C. An index high before and falling after exercise. D. An index high before and after exercise.

Taking 250 consecutive cases of doubtful pulmonary tuberculosis in which the tuberculo-opsonic index was estimated before and after exercise for diagnostic purposes—

The index remained within normal limits in 91 cases.
The index started low and rose after exercise in 56 cases.
The index started low and remained low after exercise in 41 cases.
The index started high and fell after exercise in 54 cases.
The index started high and remained high after exercise in 8 cases.

So that we have this, to my mind, very striking result:—

Of 159 in which the index varied outside normal limits:

97 started low, and of these { 56 rose as the result of exercise. / 41 remained low after exercise.

62 started high, and of these { 54 fell after exercise. / 8 remained high.

By examining four specimens of blood—the first being taken at rest, the second immediately after exercise, and two more during subsequent rest—it was found that the positive curves conformed in the majority of cases to two types. Those whose index was high in the morning before exercise gave a curve with the apex downwards as the result of exercise, whilst those with an index starting low in the morning made a curve with the apex pointing upwards as the result of exercise. (Chart 3.)

I would suggest that the group A and B point to a localised chronic tuberculous infection, which, however, calls for treatment and must still be regarded as active. It must be remembered that the clinically arrested cases at the Frimley Sanatorium (*loc. cit.*) showed indices which remained within normal limits before and after the hardest labour. The high indices of Group C and D may be regarded as significant of greater activity of disease in that they imply an increase in the elaboration of protective substances in the serum.

It is a matter of extreme difficulty to prove whether or no the doubtful cases giving a positive index are suffering from active tuberculosis. In 100 cases with a positive index and no tubercle bacilli in the sputum special care was taken to find tubercle bacilli at a date subsequent to the blood examination. In 14 cases tubercle bacilli were found, confirming the diagnosis. The following table, which appears in the Medical Report of the Brompton Hospital, 1909, embodies the results of the opsonic index test in 68 cases.

Opsonic Index in 68 Cases.

Clinical diagnosis.	Males.			Females.		
	No. of cases.	Positive.	Negative.	No. of cases.	Positive.	Negative.
C.P.T., no physical signs*	9	6	3	8	7	1
Pleurisy with effusion ...	2	2	—	4	4	—
Fibrosis	—	—	—	2	—	2
Tuberculous bronchial glands	—	—	—	1	1	—
Thickened pleura	1	—	1	—	—	—
Addison's disease	1	—	1	—	—	—
Exophthalmic goitre† ...	—	—	—	1	1	—
Aortic aneurysm and C.P.T.	—	—	—	1	1	—
Lymphadenoma	1	1	—	—	—	—
Mitral stenosis	—	—	—	2	—	2
Mitral regurgitation	1	—	1	1	—	1
Bronchitis	8	—	8	2	—	2
Bronchitis and asthma ...	—	—	—	1	—	1
Bronchitis and emphysema	—	—	—	1	—	1
Bronchiectasis	—	—	—	1	—	1
Dyspepsia	—	—	—	1	—	1
Gastric ulcer	—	—	—	1	—	1
No pulmonary or other disease found	2	—	2	16	—	16
Totals	25	9	16	43	14	29

* This includes cases which gave a history of hæmoptysis, or which had pyrexia or other symptoms suggesting a tuberculous condition. Of the negative cases, one had tubercle bacilli in the sputum, one reacted to tuberculin, one gave a positive ophthalmic reaction, and the fourth von Pirquet's test.

† Physical signs of quiescent pulmonary tuberculosis present.

The following list comprises 100 cases, selected by the physicians, in which recourse to the tuberculo-opsonic index was considered necessary owing to ambiguity of the clinical evidence. It will serve as an illustration of the possible application of this test to some of the problems of pulmonary tuberculosis. The letters A, B, C, and D, after positive reactions, refer to the four types of variation in the opsonic index referred to above.

Physician's Note.	*Opsonic Index Test.*
1. No abnormal physical signs. No tubercle bacilli in sputum	Positive (C).
2. A doubtful tuberculous case. Slight impairment at right apex; no adventitious sounds; no sputum	,, (A).
3. Early physical signs at left apex. No tubercle bacilli in sputum	Negative.
4. No tubercle bacilli found. History of pleurisy ...	,,
5. ? Pulmonary tuberculosis; physical signs most indefinite	Positive (A)
6. Definite signs at left apex (early). No tubercle bacilli (three examinations). Opsonic indices normal	Negative.
7. Very slight signs. Calmette reaction +. No tubercle bacilli	,,
8. No tubercle bacilli (three times). Calmette reaction negative once	Positive (A).
9. Pleural thickening and induration of lung following pneumonia. Probably pulmonary tuberculosis. Tubercle bacilli present when out-patient long time ago	Negative.
10. No tubercle bacilli found. Physical signs indefinite. History of hæmoptysis	,,
11. No tubercle bacilli. Apical consolidation	,,
12. Family history of tuberculosis; history of hæmoptysis. No sputum	,,
13. No sputum. Indefinite signs; normal temperature. Sent in as early tubercle	,,
14. Doubtful physical signs	Positive (B).
15. Hæmoptysis five months ago. No physical signs of disease	Negative.
16. Physical signs, but no tubercle bacilli	Positive (D).
17. No adventitious sounds. No sputum; hæmoptysis	,, (C).
18. Doubtful signs of consolidation at left apex. No sputum	Negative.
19. No tubercle bacilli present. Chronic bronchitis with pigeon breast	,,
20. Bronchiectasis (apical cavity). No tubercle bacilli in sputum	,,
21. No sputum. Very slight impairment of resonance at right apex	,,

Physician's Note.	*Opsonic Index Test.*
22. Impaired resonance at left apex. No adventitious sounds	Positive (A).
23. A contact case with doubtful physical signs ...	,, (1).
24. Case of chronic pneumonia (apical). No tubercle bacilli	Negative.
25. Quiescent disease, both apices. No sputum... ...	,,
26. Quiescent disease, both apices. No sputum ...	,,
27. No tubercle bacilli found on many examinations. History of hæmoptysis 16 years ago	,,
28. No tubercle bacilli found, but clinically C.P.T. ...	Positive (A).
29. Cutaneous (von Pirquet) reaction negative. Age 27	Negative.
30. No tubercle bacilli. Signs indefinite	Positive (B).
31. No tubercle bacilli found, but clinically C.P.T. ...	,, (A).
32. Doubtful impairment of resonance over right clavicle; no adventitious sounds; no tubercle bacilli	Negative.
33. Slight dulness at left apex; heart drawn up. No adventitious sounds. No sputum...	Positive (C).
34. No physical signs. Doubtful case	Negative.
35. Old pleurisy	Positive (A).
36. No sputum available. Physical signs at left base ...	Negative.
37. No sputum; many signs	Positive (C).
38. Signs, but no tubercle bacilli	,, (1).
39. Thickened pleura—? tuberculous. No sputum ...	,, (A).
40. No tubercle bacilli found. History of hæmoptysis	,, (C).
41. No sputum. No active physical signs	Negative.
42. Sibilant signs, chiefly at apices	,,
43. Early signs of consolidation, right upper lobe and middle lobe. No tubercle bacilli	Positive (A).
44. Apparently tuberculosis of larynx, but no tubercle bacilli. No von Pirquet reaction; Calmette reaction doubtful...	,, (C).
45. Case of persistently low temperature with history of hæmoptysis 14 months ago	,, (B).
46. Physical signs very doubtful, but probably pulmonary tuberculosis	,, (D).
47. Case of morbus cordis with signs in lungs. No tubercle bacilli	,, (1).
48. No tubercle bacilli. Negative Calmette reaction. No definite signs, but history of chronic cough and blood-stained expectoration	Negative.
49. No sputum. Calmette reaction negative. Signs indefinite	,,
50. No sputum. Negative Calmette reaction. No definite signs. Treated for "consumption" for five years	,,
51. Physical signs present, but tubercle bacilli absent	Positive (C).
52. No tubercle bacilli. Doubtful signs	Negative.
53. Signs very slight. Has nursed mother for two years who died from pulmonary tuberculosis	Positive (B).
54. No sputum. Slight impairment of resonance at right apex, with prolonged expiration	,, (B).
55. Chest apparently healthy, but impairment at both apices and crepitations noted in out-patient department six months ago	Negative.
56. No tubercle bacilli (three times). Very slight physical signs	,,
57. Signs of apex consolidation; no adventitious sounds. No tubercle bacilli (three examinations)	Positive (A).
58. Probably pulmonary tuberculosis. Slight signs. No tubercle bacilli (very little sputum)	,, (C).
59. Asthma; very slightly impaired note at right apex. ? pulmonary tuberculosis. No sputum	Negative.
60. Probably bronchiectasis, but ? pulmonary tuberculosis. No tubercle bacilli in sputum	,,
61. No sputum. Calmette test negative (twice), but opsonic indices already done were positive ...	Positive (A).
62. No physical signs	Negative.
63. Case of mitral stenosis tested with Calmette reaction as control; distinct reaction second time of testing	Positive (C).
64. Probably tubercle. No tubercle bacilli found yet; Calmette test twice negative	,, (C).
65. Fairly obvious signs at apices. No tubercle bacilli (three times)	,, (C).
66. Sent in as tuberculous. No physical signs except sibilant râles, and expiration and vocal resonance a little exaggerated at right apex	,, (D).
67. ? Basal phthisis ? Bronchiectasis	Negative.
68. Acute pulmonary tuberculosis	Positive (1).
69. No tubercle bacilli. Slight physical signs	,, (C).
70. Chronic bronchial catarrh, with ? pulmonary tuberculosis. No tubercle bacilli found, but history of slight hæmoptysis	,, (D).
71. Physical signs, but no tubercle bacilli found ...	,, (A).
72. History of hæmoptysis, but tubercle bacilli absent both this year and last. Normal temperature throughout	,, (B).
73. Basic crepitations (both bases). No tubercle bacilli	Negative.
74. Doubtful physical signs of disease. No tubercle bacilli. Previous opsonic test positive	Positive (C).
75. No tubercle bacilli found. No definite signs. Family history of tuberculosis	Negative.
76. No tubercle bacilli found. Ophthalmo-reaction positive. Physical signs negative...	,,
77. No tubercle bacilli found. Symptoms of bronchial asthma, but coloured sputum. Family history of tuberculosis	Negative.
78. Family history of tuberculosis. No definite signs. No sputum	,,
79. Signs of old consolidation at both apices; no adventitious sounds	Positive (A).
80. No tubercle bacilli. Physical signs present ...	,, (C).
81. ? If any physical signs of disease (doubtful at right apex)	,, (A).
82. Emphysema with old disease, probably both apices	Negative.
83. Slight hæmoptysis seven months ago. No adventitious sounds. No tubercle bacilli found ...	Positive (A).
84. Quiescent pulmonary tuberculosis. No sputum...	,, (A).
85. Probably caries of the bodies of third to seventh dorsal vertebræ	,, (1)
86. The opsonic test is negative, but we should expect positive	,, (A).
87. Probably caseous pneumonia	,, (*)
88. Tuberculous pleurisy	,, (1)
89. Consolidation of right apex. No râles. No sputum. Pneumonia, right side, ten weeks ago, but right lung is contracted	Negative.
90. Slight physical signs of impairment of both apices and left base without adventitious sounds ...	,,
91. Quiescent disease of both apices	Positive (B).
92. ? Arrested tubercle	Negative.
93. ? Arrest (how far?)	Positive (C).
94. To decide whether patient's tubercle is arrested ...	,, (C).
95. How near arrest?	Negative.
96. ? Arrest	,,
97. Doubtful case. Hæmoptysis *v.* hæmatemesis ...	,,
98. Old pulmonary tuberculosis. Quiescent. ? arrested	Positive (C).
99. Broncho-pneumonia after measles. ? pulmonary tuberculosis. ? bronchiectasis	,, (C).
100. ? active tubercle	,, (D).

(*) Swinging index whilst in bed. (1) A single estimation.

Summary.

1. In the diagnosis of early pulmonary tuberculosis the recent methods of concentration (antiformin) should always be employed for the exposition of tubercle bacilli in the sputum and fæces.

2. The difficulty of interpreting the results of the various tuberculin tests seriously limits their value in the diagnosis of active pulmonary tuberculosis.

3. A positive opsonic index test is of undoubted value in the diagnosis of active pulmonary tuberculosis. A negative opsonic index test must be taken with reserve. The interpretation of the result rests with the clinician, who can take into consideration all the additional factors in the diagnosis of the case.

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Brompton Hospital for Consumption.

DURHAM UNIVERSITY MEDICAL GRADUATES' ASSOCIATION.—The autumn dinner of the southern branch of the Durham University Medical Graduates' Association was held on Dec. 2nd at the Criterion Restaurant, when many members and guests were present. Dr. J. Inglis Parsons, vice-president of the association, occupied the chair. The toast of the "University and Association," proposed by Sir W. H. Allchin, was acknowledged by Dr. William Rawes, and that of the visitors by Mr. Charters J. Symonds. Dr. W. Davis made a delightful speech in proposing the vice-president's health. Excellent music was provided by Mr. John W. Ivimey.

NOTE ON TUBERCULOUS MENINGITIS,

WITH ESPECIAL REFERENCE TO THE INVASION SYMPTOMS WHEN THE DISEASE OCCURS IN ADULTS.

BY W. B. WARRINGTON, M.D. LOND., F.R.C.P. LOND.,

PHYSICIAN TO THE NORTHERN HOSPITAL AND TO THE EYE AND EAR INFIRMARY, LIVERPOOL; LECTURER IN CLINICAL MEDICINE IN THE UNIVERSITY.

TUBERCULAR meningitis in adults is met with chiefly as a terminal event in chronic pulmonary phthisis. Its frequency in this condition has been variously estimated. Dr. S. West [1] says it accounts for 8 per cent. of deaths, but the figures he gives from an analysis of his own fatal cases—viz., 1·5 per cent. when this lesion was present alone with the disease in the lungs, or 2·5 per cent. if cases of generalised tuberculosis are included—agree better with what appears to be the general experience. Thus, of 531 fatal cases at the Brompton Hospital, Fowler and Godlee [2] state that tubercular meningitis was the cause of death in 3·3 per cent.

Several writers mention that when tubercular meningitis occurs in adults the clinical picture may present unexpected features, misleading if the possibility of this condition is not remembered. Professor Oppenheim,[3] in describing the early delirium and mental confusion which soon occur, points out that grown-up patients may go about in this stage and appear as if afflicted mentally; sometimes they are in a dreamy state, sometimes excited and agitated, so much so as to closely resemble persons under the influence of alcohol.

Sir William Gowers [4] says that in this stage young women may show hysteroid symptoms, and in the "System of Medicine" of Professor Osler and Professor McCrae Dr. Lawrason Brown [5] writes: "In certain instances there has been great difficulty in making the diagnosis from hysteria, early mental disease, or delirium tremens." A further point to be noticed is that this complication has often occurred in those in whom the pulmonary disease appeared to be making satisfactory progress. This has been alluded to by Sir R. Douglas Powell [6] and Sherman G. Bonney.[7]

During the last few years I have met with several cases of this disease in adults in which anomalous symptoms of this kind were observed, and, followed as they were by somewhat sudden coma and death, formed a striking clinical picture. I related these cases at the meeting of the Association of British Physicians held in Liverpool this year, and the short discussion which followed leads me to hope they are sufficiently interesting to be placed on record.

CASE 1.—The patient, a man aged 33 years, was fairly well developed, and without any history of important antecedent illnesses. He kept a small grocer's shop in the north end of Liverpool, where the recent religious riots occurred; the disturbance appears to have greatly upset him, and it was to this that he attributed the vague pains in the head, general weakness, insomnia, and dyspeptic symptoms with some vomiting for which a month before his death he first consulted a medical man. He continued, however, to attend to his business for over a fortnight. To relieve the sleeplessness he was given on the night of Dec. 5th a largish dose of chloral and bromide. On awakening in the morning he drank a cup of tea, said a few words, and settled down to sleep. Consciousness was never recovered.

On Dec. 7th I first saw the patient. The temperature was slightly raised; pulse of 68, and respirations 24 a minute. There were no signs of paralysis; ophthalmoscopic examination was normal. The viscera appeared healthy. I found a slight degree of Kernig's sign, and some little rigidity of the neck. Examination of the cerebro-spinal fluid showed that this was under considerable pressure; it was quite clear, and contained a large number of lymphocytes. Death took place on the 11th, without the development of any further symptoms. The temperature ranged from 100° to 101° F., the pulse and respirations gradually increasing in frequency.

Permission for a post-mortem examination limited to the head was obtained. The typical appearances of tuberculous meningitis were found, the vessels of the base of the brain and along the Sylvian fissure being studded with innumerable tubercles.

CASE 2.—The patient, a man aged 38 years, was admitted to hospital on June 9th, 1905. He had been out of work for some months, had lost weight, and suffered from mental depression. The symptoms of his fatal illness began five weeks before admission with feeling of numbness in the right shoulder; this sensation spread down the arm and then invaded the lower limb. During the next month the sensations recurred with great frequency, and at last were accompanied by temporary loss of power. On admission to hospital the patient looked ill, but was quite rational and able to walk. The temperature was slightly raised to 100° or 101° F., the pulse was 94, and respirations 28. No disease was found in the thoracic or abdominal viscera, and ophthalmoscopic examination showed a healthy fundus. Headache and vomiting were absent, but percussion of the skull was somewhat painful. There were no paralyses or alterations in the reflexes. The patient remained in this condition for ten days, when quite suddenly he became mildly delirious and passed into a state of semi-coma. A right hemiplegia was now present with the extensor plantar response. By lumbar puncture a fluid was obtained containing an excess of albumin and a large number of cells both of the polynuclear form and lymphocytes. He never recovered consciousness, and at the end of a week the temperature rapidly ran up and death occurred.

Unfortunately here again the head only could be examined. The brain showed the characteristic appearance of tuberculous meningitis, and this was confirmed by microscopical examination.

CASE 3.—The patient, a woman, aged 45 years, had suffered from phthisis for ten years, but had been in fair general health, able to do her household and other work. There was no cough or other symptom of the disease. Examination of the lung showed the presence of a large dry cavity. About a month before her fatal illness throbbing sensations in the head and vague pains began to trouble her; these symptoms disappeared for a time, but afterwards returned in greater severity. At the end of a fortnight the patient was compelled to go to bed and became somewhat apathetic. The temperature was a little raised, varying from 99° to 101° F. As the drowsiness increased the pain disappeared. When seen by me the patient was very weak and drowsy, but could be roused to answer questions. There was slight optic neuritis, but no other signs of nervous disease. Kernig's sign and rigidity of the neck muscles were absent. The cerebro-spinal fluid was clear, highly albuminous, and contained a large excess of lymphocytes.

CASE 4.—The patient, a man, aged 33 years, was under the care of Dr. John Owen, who has kindly given me the notes. The man was a labourer, and previous to this illness appears to have been in good health; he said that he had never lost a day's work. About one month before his death his fellow-workmen are said to have noticed that he was quieter than usual, but only a fortnight before the end were there any definite symptoms—viz., headache and vomiting. He complained to his friends of weakness and was seen to tremble and stagger. It was, however, not until three days before his death that he was compelled to remain in bed and send for a medical man. He was then found to be in a stuporous condition. On the next day he was seen by Dr. Owen, who found no physical signs of disease, with the exception of an extensor plantar reflex on one side. There was no Kernig's sign, no head retraction, nuchal rigidity, or optic neuritis. By lumbar puncture a fluid was obtained which showed the usual characteristic, excess of lymphocytes, and also the tubercle bacilli.

CASE 5.—The patient, a woman, aged 26 years, had suffered from headache for about a year, but had continued her household duties and other work. On April 22nd, 1910, she was seen by Dr. E. I. Claxton, who found her excited and hysterical in manner. She had vomited several times and complained of pains in the back and head. The pulse and temperature were normal. Dr. Claxton carefully examined the nervous system, but found no objective signs of disease. The vomiting ceased, but the mental condition remained one of great excitement, the patient raving, moaning, and tossing about. On April 30th paralysis of the left abducens was first observed, and the diagnosis of organic disease, hitherto uncertain, being now obvious, she was sent by Dr. Claxton into hospital, where she was admitted in a condition of exhaustion and incoherent delirium. The patient was obviously very ill; the skin dry, the tongue furred, cracked, and dry, and the breath foul; the temperature was 100° F., and the pulse 76. Paralysis of the left external rectus muscle was present and a slight Kernig's sign, but no other physical signs. The diagnosis of meningitis was made, probably tuberculous, and this was confirmed by lumbar puncture, the fluid containing a large number of lymphocytes and tubercle bacilli. The patient lived nine days, the delirium being gradually replaced by drowsiness and coma.

The post-mortem examination showed obsolete tuberculosis of the apex of the left lung, caseating bronchial glands, a caseous solitary tubercle in the vermis cerebelli, and generalised tuberculous meningitis of the usual distribution.

Of these five cases all were engaged in their usual occupation before the fatal illness, and previous disease was known to exist in only one—viz., the woman with chronic phthisis. In all there was an incubation period of three to four weeks, characterised by slight physical and mental symptoms of depression, strangeness in manner, or hysteroid attacks; then a sudden change, a rapid onset of coma terminating within a week in death, the terminal stage also being, with the exception of Case 5, unaccompanied by obtrusive physical signs.

In a recent paper J. Jaquet,[8] writing on this subject, says that of 204 fatal cases of chronic phthisis 16 died from tuberculous meningitis as proved by necropsy, and of these cases seven were between the ages of 41 to 68. Clinically, several of these cases presented the same startling development of symptoms, and most had been about their usual work until the onset. Two patients were brought into the hospital unconscious, in which state they had been found in the streets; one was seen to stagger about as if drunk; another, who complained of headache, was morose and silent; and another, taken ill whilst in the hospital, showed as the first symptoms restlessness and attempts to get out of bed. This invasion stage lasted a week or more, followed by the terminal stage of coma, the average duration of which was ten days. There were

[1] Text-book on Diseases of the Lungs.
[2] Text-book on Diseases of the Lungs.
[3] Lehrbuch der Nervenkrankheiten, p. 890, vol. ii.
[4] Manual of Nervous Diseases, p. 343, vol. ii.
[5] P. 310, vol. iii.
[6] Diseases of the Lungs and Pleura, 1886.
[7] Pulmonary Tuberculosis, 1903.
[8] Deutsche Medizinische Wochenschrift, March 10th, 1910, p. 449.

throughout very few physical signs and no definite paralyses. Vomiting was absent in all, and headache only a prominent symptom in two instances.

Diagnosis.—When a patient known to have chronic phthisis begins to show anomalous mental symptoms, invasion of the meninges may be suspected, and this suspicion increases if headache and other symptoms, especially the appearance of the Babinski reflex or a difference in the knee-jerks, are present. When, however, previous disease is not known and evidence of disease elsewhere cannot be found the opening symptoms are very difficult to correctly interpret. This must have been so especially in my first two cases. If the symptoms are sufficiently serious it appears that the examination of the cerebro-spinal fluid will usually clear up the diagnosis.

My object has been to call attention to the manner in which tuberculous meningitis sometimes develops in adults. I should also like to take this opportunity of mentioning two other cases of this disease of some interest.

1. An instance of recovery. Dr. Alfred E. Martin[9] has fully reviewed what is known of the remissions and recovery in tuberculous meningitis.

CASE 6.—My case is that of a boy, aged 11 (seen a year ago under the care of Dr. Bennett Jones), who presented the usual characteristic manifestations and double optic neuritis. The cerebro-spinal fluid contained many cells, both polynuclear and lymphocytes; tubercle bacilli were found on a number of occasions. After a prolonged illness the patient gradually recovered. His general health is now excellent; he plays games and does the ordinary work of a school-boy. There is, however, a slight right monoplegia of the arm.

2. An instance of meningo-encephalitis tuberculosa circumscripta, the meningitis *en plaque* of the French writers:—

CASE 7.—The patient, a man aged 35 years, was admitted to hospital on March 10th, 1909. He was extremely ill and greatly emaciated, somewhat cyanosed, and suffering from dyspnœa. He appears to have been at his work until three weeks before this illness; ten days before admission he was seized with feverish symptoms and pains in the back and abdomen. On the next day the right hand was weak, and on the day following he was unable to speak. The loss was permanent; the only word he was known to say was "Sammy," the name of his child. A few days later several convulsions occurred. Almost up to the time of his admission, however, he appears to have been able to stand. On examination we found that the patient was conscious and responded to pantomimic suggestion. The whole of the right upper limb was completely paralysed, and there was considerable paresis of the right lower face. He was able to move both lower limbs. The knee-jerks were present and the plantar responses were of the flexor type. Examination of the lungs gave evidence of general bronchitic signs. The patient died in a few days. The diagnosis was considered to be acute general tuberculosis.

The post-mortem examination disclosed miliary tuberculosis of the lungs and old lesions at both apices. On the surface of the left hemisphere of the brain two plaques of disease were seen at the sites indicated in the figure. The one in the temporo-sphenoid convolution was hard and opaque white; the larger one in the angular gyrus was partly dull red, the colour evidently due to subjacent hæmorrhage, and

Meningo-encephalitis tuberculosa circumscripta.

partly covered with pus. There was no generalised meningitis or tubercle along with the course of the vessels.

Horizontal sections were cut through the brain at the level of the points *a*, *b*, *c*, *d*. Those through *a* and *b* showed that the discolouration was due to the presence immediately between the cortex of two plum-coloured masses of hæmorrhagic brain tissue, and that the tissue beneath these was necrotic. Softening without hæmorrhage was found in the sections at the levels *c* and *d*. The cerebro-spinal fluid was somewhat turbid.

[9] Brain, vol. xxxii., p. 209.

This condition is not very common. An excellent description, with references to the findings of other writers, is given by Oppenheim in his Lehrbuch,[10] and it is noteworthy that six cases recovered in which he diagnosed this condition.

The hæmorrhage is doubtless due to tuberculous vascular disease, and it is a point of some practical interest that the fluid obtained by lumbar puncture in tuberculous meningitis is sometimes coloured with blood. I have on the post-mortem table found in several instances considerable meningeal hæmorrhage.

Liverpool.

THE ETIOLOGY OF BERI-BERI.

BY HENRY FRASER, M.D. ABERD.,
DIRECTOR, INSTITUTE FOR MEDICAL RESEARCH, KUALA LUMPUR, FEDERATED MALAY STATES;
AND
A. T. STANTON, M.D. TOR.,
BACTERIOLOGIST, INSTITUTE FOR MEDICAL RESEARCH, KUALA LUMPUR.

IN a former paper published in THE LANCET[1] it was shown that the occurrence of beri-beri was intimately associated with the consumption of a diet of which white rice was the staple. This view of the origin of the disease, first stated in concise form in this country by Braddon,[2] had its beginnings in the work of the Dutch physicians of the last century, and has since been amplified and confirmed by the labours of Van Dieren, Dubruel, Fletcher, and others, and more especially by the valuable observations and researches of Braddon.

Further experimentation was undertaken by us to determine the mode of operation by which white rice was able to produce this result. Braddon believed that the cause of beri-beri was a poison developed in stale white rice by the action of some organism, while Dubruel held that a living germ was ingested with white rice, and that this germ, multiplying in the body, produced the disease. The observations made by us led to the conclusion that beri-beri is a disorder of metabolism, and that white (polished) rice, as milled by machinery on a large scale, commonly makes default in respect of some substance or substances essential for the maintenance of the normal metabolism of nerve tissues. It was further shown that in the original grain these substances are contained in the cells of the subpericarpal layers which are removed in the process of polishing. As measures for the prevention of the disease it was recommended that, for the ordinary white rice in the diet, there should be substituted a rice in which the polishing process had been omitted or carried out to a minimal extent. These conclusions, first published in December, 1909, received the endorsement of the Far Eastern Association of Tropical Medicine at its meeting in Manila in March, 1910,[3] and practical measures, based upon them, are now being taken by the Governments of those countries where beri-beri most abounds.

During the past year attention has been directed towards the determination of the nature of the substances present in the subpericarpal layers of the original grain which are removed in the milling process and which, it would appear, are of such high physiological importance in maintaining normal nutrition when a diet largely composed of white polished rice is consumed. This research has not yet been completed, but thus far it has confirmed the accuracy of the work already recorded, and by a process of exclusion the problem has become appreciably less complex.

Introductory.

For the purpose of testing the value of the various materials, fowls weighing 1200 grammes or thereabouts were employed. Each, as in previous experiments, was confined in a separate cage and, save in one instance, groups of 12 were used. The fowls received rice twice daily at 10 A.M. and 3 P.M., and when receiving polishings or materials prepared from polishings, the substance in question

[10] Vol. ii., p. 896.

[1] H. Fraser and A. T. Stanton: An Inquiry Concerning the Etiology of Beri-beri, THE LANCET, Feb. 13th, 1909, p. 451.

[2] W. L. Braddon: The Etiology of Beri-beri, Federated Malay States Medical Archives, 1901.

[3] Transactions of the Far Eastern Association of Tropical Medicine, Philippine Journal of Science, 1910, vol. v., No. 1.

was given as an emulsion, by means of a stomach-tube, half an hour after the rice had been given. Every fowl was weighed once a week at 12 noon.

As a result of a series of former observations it had been determined that fowls weighing from 1200–1400 grammes required about 60 grammes of unpolished rice daily, and, if fed on 60 grammes polished rice, they required in addition 5 grammes of sifted polishings for the maintenance of weight and health. In a previous experiment, where products derived from different lots of padi were employed, 3·5 grammes of the polishings were shown to be sufficient with the white rice then in use. In the present experiment all the products employed—unpolished rice, polished rice, polishings, &c.—were derived from the same lot of padi. For purposes of comparison the following results of analyses are given:—

—	Protein.	Fats.	Carbo-hydrates.	Ash.	Moisture.	P_2O_5
	%	%	%	%	%	%
Polishings (sifted)	13·7	14·16	52·77	7·54	11·83	4·1
Unpolished rice ...	9·0	1·65	75·52	1·08	12·75	0·56
Polished rice... ...	8·6	0·22	76·23	0·6	14·35	0·26

When the composition of these articles is calculated on dried materials the differences are rendered more striking and accurate, and when in a similar manner the composition of a diet made up of 60 grammes of polished rice and 5 grammes of polishings is calculated it will be seen how closely such a diet approximates to one of unpolished rice.

Calculated on Dried Materials.

—	Protein.	Fats.	Carbo-hydrates.	Ash.	P_2O_5
	%	%	%	%	%
Polishings (sifted)	15·5	16·0	59·8	8·5	4·65
Unpolished rice	10·3	1·89	86·5	1·23	0·64
Polished rice	10·0	0·25	89·0	0·7	0·3
Ration 60 grammes polished rice *plus* 5 grammes polishings contains per cent.	10·4	1·5	86·6	1·31	0·64

Sifted polishings were invariably employed because polishings as received from the millers contain a considerable mixture of husk and broken rice.

Polishings when fresh are neutral in reaction, but on keeping they become acid. This change does not impair their efficiency, however, and polishings which have been stored with ordinary care for months are quite as valuable as the fresh materials. The ordinary process of cooking does not impair the value of polishings. For these reasons it is considered that the essential substance or substances are not unstable.

1. *Fat.*—Fat in the rice-grain is mostly confined to the subpericarpal layers. Unpolished rice is therefore richer in fat than polished rice, and polishings are very rich in fat. To determine the value of this fat a quantity of sifted polishings was packed in a percolator and percolated with petroleum ether. In this way the amount of fat in the polishings was reduced from 14·16 to 0·6 per cent. The fat-free polishings were dried by exposure to the sun until free from petroleum ether.

Twelve fowls were fed on polished rice and received in addition daily 4·5 grammes of fat-free polishings, being the approximate equivalent of 5 grammes of sifted polishings. The fowls remained healthy and maintained their weight just as had been the case when fowls received polished rice and sifted polishings. The non-importance of fat was therefore decided and its exclusion from the number of possibilities was of the utmost value since the fat had hitherto complicated our experiments.

2. *Phytin.*—Estimations of the percentage of phosphorus pentoxide in rices had consistently shown their value as indicators of the liability or otherwise of a given rice to produce polyneuritis. Thus the higher the percentage of phosphorus pentoxide contained in a rice, the less liable was that rice to produce polyneuritis when fowls were fed on it.

The unpolished rice, which we employed, contained 0·56 per cent. phosphorus pentoxide and did not cause polyneuritis. The polished rice contained 0·26 per cent. phosphorus pentoxide and invariably caused polyneuritis, while washed polished rice containing 0·22 per cent. phosphorus pentoxide was more harmful than the unwashed polished rice. This suggested the probability that the essential substance was one containing phosphorus. It was first stated by Dr. Hans Aron,[4] Bureau of Science, Manila, that the substance in question is phytin, the calcium magnesium salt of an organic acid containing phosphorus. We estimated that the unpolished rice in use contained 1·07 per cent. of phytin, that the polished rice contained only a trace of that salt, and that the polished rice after washing and drying contained none. The sifted polishings contain 8·8 per cent. of phytin.

In testing the importance or otherwise of phytin we did not employ the commercial product because of our ignorance of its source and method of preparation, but prepared it ourselves in the following manner. Sifted polishings were mixed with 0·3 per cent. hydrochloric acid in the proportion of 300 grammes of the former to 2000 cubic centimetres of the latter, the mixture was stirred throughout the day, and on the following morning was filtered through a Buchner's filter. The clear yellowish filtrate was mixed with one and a half times its volume of 95 per cent. alcohol, which produced a white precipitate of phytin; the mixture was allowed to stand for a few days. The precipitate was collected, washed with strong alcohol to free it from acid, and dried in a vacuum desiccator. A friable cake of phytin was obtained readily reducible to a white powder, soluble in water, yielding an opalescent solution with an acid reaction and giving, on addition of sodium carbonate, a white flocculent precipitate. The powder contained 34 per cent. of phosphorus pentoxide.

A fowl consuming 60 grammes of unpolished rice daily would be receiving 0·66 gramme of phytin, and a fowl receiving the same amount of washed, polished, and therefore phytin-free, rice would require to have in addition that amount of phytin daily in order to bring the value of this diet, in respect of phytin, up to that of an unpolished rice diet.

Twelve fowls received washed, polished rice, and in addition phytin, which was given in the following manner: 9 grammes of phytin were dissolved in distilled water, the solution neutralised with sodium carbonate, and the volume made up to 360 cubic centimetres. Each fowl received 15 cubic centimetres of this suspension at 10.30 A.M. and 3.30 P.M. daily, an amount of phytin slightly in excess of the estimated quantity. All the fowls lost weight and cases of polyneuritis occurred just as if the fowls had received washed, polished rice only.

In the next experiment 12 fowls received the phytin-suspension intimately mixed with the washed, polished rice, but the results were the same, and the importance of phytin was by these experiments definitely disproved.

3. *Substances soluble in 0·3 per cent. hydrochloric acid.*—Experiments were next carried out to determine if, when polishings are macerated in 0·3 per cent. hydrochloric acid, the essential substance or substances pass into solution. This solvent was chosen as it had been employed for the extraction of phytin. Polishings in quantities of 180 grammes, being the amount required by 12 fowls in three days, were mixed with 1000 cubic centimetres of 0·3 per cent. hydrochloric acid, stirred during the day, and the following morning filtered through a Buchner's filter. 100 cubic centimetres of 0·3 per cent. hydrochloric acid were used to wash out the vessels. When fluid could no longer be extracted from the mass it was mixed with 600 cubic centimetres of 0·3 per cent. hydrochloric acid, stirred during two hours, and thereafter filtered as before. The extracted polishings were mixed with distilled water, nearly neutralised with sodium carbonate, and the volume was adjusted to 1080 cubic centimetres. 30 cubic centimetres of this emulsion contained 5 grammes of polishings, less the materials dissolved out by the acidulated water. The combined

[4] Hans Aron: Philippine Journal of Science, 1910, vol. i., p. 97.

filtrates obtained from 180 grammes of polishings were nearly neutralised with sodium carbonate and concentrated at a low temperature to a volume of 1080 cubic centimetres. 30 cubic centimetres of this suspension contained the substances dissolved out by acidulated water from 5 grammes of polishings.

Twelve fowls were fed on washed, polished rice, each receiving daily 30 cubic centimetres of the emulsion of extracted polishings; cases of polyneuritis occurred.

Twelve fowls were fed on washed, polished rice, each receiving in addition 30 cubic centimetres of the suspension of dissolved substances; cases of polyneuritis did not occur. Therefore the essential material was removed and uninjured by the process of extraction and subsequent treatment. By this process of extraction 88 per cent. of the phosphorus pentoxide contained in polishings is dissolved out. Of this amount, 73 per cent. is represented by the phytin in the solution, so that, together with the 12 per cent. remaining in the polishings after extraction, 85 per cent. of the phosphorus pentoxide contained in polishings is shown to be unimportant.

100 grammes sifted polishings yield 4·1 grammes P_2O_5.

- Dissolved out by 0·3 per cent. HCl, 3·6 grammes, or 88 per cent.
- Remains in polishings, 0·5 gramme, or 12 per cent.

On addition of alcohol

- Precipitate (phytin), 3 grammes, or 73 per cent.
- Filtrate, 0·6 gramme, or 15 per cent.

4. *Alcohol (proof spirit) soluble fraction of the substances originally soluble in 0·3 per cent. hydrochloric acid.*—When 100 grammes of polishings are extracted in the manner described, 26 grammes pass into solution, and of that amount 8·8 grammes are precipitated on the addition of alcohol. Therefore, in the alcoholic filtrate which contains 17·2 grammes of the soluble substances obtained from polishings the essential material should be contained.

100 grammes sifted polishings extracted with 0·3 per cent. HCl

- Passes into solution, 26 grammes.
- Insoluble, 74 grammes.

On addition of alcohol

- Precipitate (phytin), 8·8 grammes.
- Filtrate, 17·2 grammes.

Experiments were next carried out to test the accuracy of this suggestion. Polishings in quantities of 180 grammes were treated as in the previous experiment, and the combined filtrates from each 180 grammes were mixed with one and a half times their volume of 95 per cent. alcohol. After standing for two days the precipitate was filtered off, dissolved in warm distilled water, nearly neutralised with sodium carbonate, and the volume adjusted to 1080 cubic centimetres. 30 cubic centimetres of this suspension contained the alcohol precipitable substances (phytin) from 5 grammes of polishings.

Six fowls were fed on washed polished rice and received daily 30 cubic centimetres of this suspension of phytin. Cases of polyneuritis occurred, thus confirming the accuracy of the previously recorded experiments which proved the unimportance of phytin.

The alcoholic filtrate was nearly neutralised with sodium carbonate and evaporated at a low temperature until free from alcohol. The residue was diluted with distilled water to a volume of 1080 cubic centimetres. 30 cubic centimetres of this suspension contained the almost phytin-free soluble substances from 5 grammes of polishings.

Six fowls were fed on washed polished rice, and each received daily 30 cubic centimetres of this suspension. All remained healthy.

These experiments prove that of 5 grammes of sifted polishings required daily for the maintenance of weight and health in a fowl on a white polished rice diet, no less than 4·2 grammes are unimportant, and of the 0·8 gramme remaining probably only a part is essential.

—	Effect on fowls; estimated by occurrence of polyneuritis.	Estimated percentage of fat in diet.	Estimated percentage of P_2O_5 in diet.
Unpolished rice	−	1·65	0·56
Polished rice *plus* polishings ...	−	1·3	0·55
Polished rice	+	0·22	0·26
Washed polished rice	+	0·22	0·21
Washed polished rice *plus* fat-free polishings	−	0·25	0·51
Washed polished rice *plus* polishings	−	1·3	0·51
Polishings Extracted with 0·3 per cent. HCl.			
Washed polished rice *plus* extracted polishings	+	1·3	0·23
Washed polished rice *plus* extract	−	0·22	0·47
Extract Mixed with 1½ times its Volume of 95 per cent. Alcohol.			
Washed polished rice *plus* precipitate (phytin)	+	0·22	0·41
Washed polished rice *plus* filtrate	−	0·22	0·24

Summary and Conclusions.

1. White polished rice when forming the staple of the diet in man has been shown to cause beri-beri.

2. Such white polished rice when fed to fowls produces in them a disease closely analogous to beri-beri in man. This reaction has been taken in this, and previous researches, as a test of the beri-beri producing power of a given rice when it forms the staple of a diet in man.

3. The addition of rice polishings to a diet of white rice is an effective preventive of the development of polyneuritis in fowls. Rice polishings comprise from 8 to 10 per cent. by weight of the original grain.

4. The substances contained in polishings which are effective in preventing polyneuritis are soluble in 0·3 per cent. hydrochloric acid, and are not precipitated from the solution on the addition of 95 per cent. alcohol in quantity sufficient to make the resulting mixture of proof-spirit strength. These substances comprise 16 per cent., or less, by weight of rice polishings, or 1·6 per cent., or less, by weight of the original unpolished rice grain.

5. The fats which are contained in rice polishings in comparative abundance have been proved of no importance in preventing polyneuritis.

6. Phosphorus compounds equal to 85 per cent. of the total phosphorus content have been proved to be unimportant in preventing polyneuritis.

Kuala Lumpur.

CASES OF PRIMARY CARCINOMA OF THE APPENDIX VERMIFORMIS.

BY ALEX. MILLS KENNEDY, M.B., CH.B. GLASG.,
ASSISTANT PATHOLOGIST TO THE GLASGOW ROYAL INFIRMARY; PATHOLOGIST TO THE GLASGOW MATERNITY AND WOMEN'S HOSPITAL.

(From the Pathological Department of the Glasgow Royal Infirmary.)

CASES of carcinoma of the appendix have always been considered of very great rarity, and, while admittedly they are rare, the number on record is steadily increasing with the custom of having all appendices removed at operation submitted to microscopical examination. From their situation they give rise to symptoms which direct attention to the appendix, and its early removal, preventing metastasis, goes a long way to explain the apparent non-malignancy of this tumour, which recently has been stated to be in the majority of cases a simple form of endothelioma.

In THE LANCET of Oct. 23rd, 1909, I reported a case of primary carcinoma of the appendix in a man, 49 years of age. This patient remained in good health without return of any symptoms, and ten months after his operation left for Canada, reporting himself by letter, a month later, quite

well. The specimen was found in the routine histological examination of appendices removed at operation. Since then I examined microscopically in the same way 40 appendices before I found the first of the two primary cases now reported. In this new case the appendix is constricted and the lumen occluded, the carcinoma arising at the site of the occlusion.

CASE 1.—The patient is a particularly healthy-looking young woman with a florid complexion. She is only 23 years of age. In November, 1908, she had her first attack of appendicitis; she was seized with sickness and vomiting which continued for about two days, and, shortly after the commencement of the sickness, severe pain in the right iliac region. The attack lasted three weeks. In November, 1909, she had a second attack similar in nature, but less severe than the first. Since her first attack she had always felt a little uneasiness or tenderness in her appendix region, more particularly when she had walked for some time. For three or four years previous to her first attack she had been subject to "bilious attacks," but, except for attacks of measles and scarlet fever, she had always enjoyed good health.

The patient was admitted to Mr. P. Paterson's wards at the Glasgow Royal Infirmary on May 6th, 1910, for operation in the quiescent period after her second attack. Examination revealed tenderness on pressure over the appendix region, but there was no distension of the abdomen nor rigidity of the recti muscles. On May 9th Mr. Paterson performed appendicectomy, and although the organ was readily removed it was found to be adherent to intestine in places.

Mr. Paterson states that at the operation there was nothing found which in any way suggested to him the presence of malignant disease in the appendix or its neighbourhood. The appendix measured 2¼ inches in length, and on external examination it was apparent that there was a constriction ¾ inch from the distal end. The distal segment formed a spindle-shaped swelling; the proximal segment is narrower and cylindrical. The whole appendix was fixed in formalin 5 per cent., and, after washing, was divided longitudinally in the axis of the meso-appendix. On examining the cut surfaces it was at once seen that the external constricting marking corresponded to a definite stricture of the lumen, apparently a complete occlusion. This appeared to be produced by a thickening of the submucous layer and folding inwards of the mucous membrane, which was limited to the side of the appendix opposite its mesenteric attachment. The distal segment showed a uniform distension of its lumen with a creamy substance which proved to be pus. Nothing of note was apparent to the naked eye in the proximal segment.

Microscopical examination of appendix.—A portion about half an inch long was taken, and longitudinal sections were cut from it; this portion was taken from about the centre so as to include the occluded portion and part of the appendix on either side of it.

The lumen distal to the constriction is dilated and contains inspissated pus, and there is some flattening of the mucous membrane.

FIG. 1.

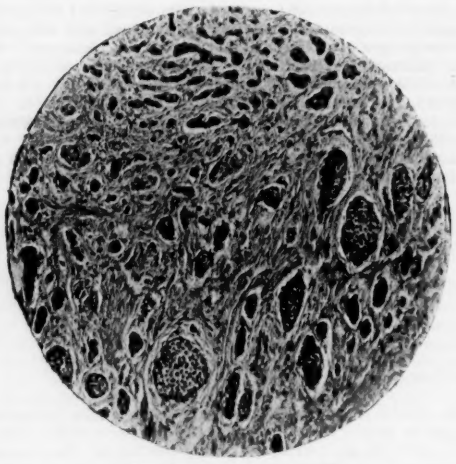
Carcinoma of appendix. × 90.

Proximally the lumen contains only a little mucus and blood, the latter probably the result of the operation. Throughout, for the greater part, there is a fairly uniform thickening of the submucous fibrous layer. At the site of the occlusion this layer is seen to thicken on the side opposite to the mesenteric attachment and then dip in and pass across the lumen, as a narrow band, to the opposite side. The mucous membrane on either side turns inwards and lines the constriction. The circular muscular layer also bends inwards for a short distance at this point.

In this constricted area, and limited to the half of the appendix opposite the mesentery, is an unmistakable carcinoma. In the mucous membrane adjacent to the distal side of the occlusion the carcinoma is seen extending from about midway across the lumen towards the peritoneum. In the mucous membrane carcinoma cells lie side by side with the normal glands, and apparently replace others. (Fig. 1.) The cells are fairly large, spheroidal, with relatively large nuclei, arranged in the alveoli of a scanty fibrous stroma, and forming solid masses of varying size. In short, the structure is that of a typical scirrhous carcinoma.

Passing from the mucous membrane outwards, the carcinoma seen in the greatly thickened portion of the submucous coat as numerous smaller masses of epithelial cells in the alveoli of a much more abundant fibrous stroma. It passes through the circular muscular coat

FIG. 2.



Carcinoma of appendix. × 90.

as a few isolated masses between the muscle fibres. When it reaches the longitudinal layer of muscle it again forms a definite collection of similar solid masses of epithelial cells arranged as before, in the alveoli of a dense and fairly abundant fibrous stroma. (Fig. 2.) The tumour extends outwards to the peritoneal coat, which is thickened and covered with old adhesions.

Immediately beyond the constriction, adjacent to the carcinoma, there is a deep acute ulcer filled with pus, and extending almost right through the mucous membrane. The muscular coats beneath this ulcer are lost, their place being taken by the old adhesions already noted over the tumour. It appears very probable that this defect in the muscular coats and the formation of adhesions, together with the occlusion, are the result of a former ulceration of the appendix wall. Further, in this occluded area and, as yet, limited to it, there is now present an unmistakable scirrhous carcinoma. There is nothing further of note in the appendix beyond the fact that throughout the circular muscular layer there is considerable fatty degeneration.

The second new specimen was found post mortem, without the appendix having previously been suspected. In it also the appendix is constricted and occluded a short distance from its tip, which is bulbous and occupied by tumour.

CASE 2.—The patient was an extremely emaciated woman, aged 42 years, who was admitted to the medical wards of the Glasgow Royal Infirmary suffering from hepatic enlargement with ascites, and later was transferred to the surgical wards for abdominal drainage. She had been a heavy drinker for many years and had long suffered from indigestion after practically every meal. She had ascites for six months, and œdema of the legs for three months, before admission. On admission there was constant pain over the whole upper and left side of the abdomen, but she was unable to point to any one spot as being the site of greatest pain. The pain was sharp and stabbing and frequently very severe. She died suddenly a month after the operation.

Necropsy.—At the post-mortem examination the liver was found enormously enlarged (129 ounces), and showed an extreme degree of amyloid degeneration, with thickening of its capsule. The spleen and kidneys were also diffusely amyloid, and the capsule of the former was thickened. A firm fibrous mass of thickened adherent pleura, with a large cicatrix in the left lung under it, was found; it was evidently very old, and nothing was found anywhere else in the lung indicative of its nature. There had been a chronic peritonitis, evidenced by thickening and opacity of the peritoneum, with adhesions throughout the abdomen. The stomach and intestine throughout presented an œdematous condition but no other sign of disease.

The appendix was shorter than usual, turned back upon itself, and adherent to the adjacent loop of small intestine. On separation, it was seen that the tip of the appendix was occupied by a small hard nodule, the organ being club-shaped. Careful search was made, but no other tumour nor enlarged glands were found.

Microscopical examination of appendix.—The appendix was fixed in formalin, and longitudinal sections of the whole organ, in addition to transverse sections of the tumour, were prepared. The tip of the

appendix was demarcated from the remainder and bent inwards towards the meso-appendix, and in it there was present a carcinoma.

There were old adhesions round the appendix, and the muscular coats showed some fibrosis. There was considerable thickening of the submucous fibrous coat throughout, and the mucous membrane was also thickened and fibrosed. About ½ inch from the tip the appendix is completely occluded. Here sections show the circular muscular layer extending right across the organ, bounded on either side by the thickened layer of submucous fibrous tissue. On the mesenteric side the longitudinal layer of muscle dips inwards for a short distance at the site of occlusion, but on the opposite side it passes right over and round the tip.

Beyond the occlusion there is no lumen; the mucous membrane is altogether lost, and its place and the cavity are occupied by a characteristic carcinoma. The tumour appears as two nodules. One, immediately adjacent to the occlusion above mentioned, is completely surrounded by a thickened layer of submucous tissue, and apparently replaces the mucous membrane. The other is situated distally, nearer the tip, which, as above noted, is turned round towards the mesenteric attachment, and is surrounded by muscular and fibrous tissue. Externally the longitudinal and circular muscular layers are distinct, and the tumour here also is situated within a layer of fibrous tissue corresponding to the submucous coat. Between these two nodules a layer of muscle corresponding to the circular layer is present; it is infiltrated with tumour, and the infiltration extends in the circular muscular layer on either side of the distal nodule, but does not involve the tip.

The cells are spheroidal, the protoplasm is abundant, and the nuclei are relatively large and dense; they form solid masses, surrounded by a dense though rather scanty fibrous stroma. The two nodules have practically the same characteristics, and are undoubtedly scirrhous carcinoma. Between the two nodules, and spreading laterally, masses of similar cells are seen between the fibres of the circular ayer of muscle.

During the past 11 months I have examined, as a matter of routine, the appendix in over 350 necropsies, yet this last case is the only primary tumour I have yet found in it. I have twice found secondary tumours in it, and in both cases they were carcinomata secondary to carcinomata of the stomach. They each showed the same structure as the primary growth in the stomach.

The three primary carcinomata of the appendix which I have now reported present features so similar as regards their site of origin that they are of considerable interest in view of the question of the etiology of tumours in general. In the first case the appendix was divided into two segments, no doubt the result of cicatrisation of previous ulceration, and in the sequestrated distal portion the carcinoma was situated. In the second case there is a complete occlusion of the lumen, in all probability due to the same cause, and in this constricted area, and as yet limited to it, the carcinoma is present. In the third case the appendix is also completely occluded in the same way near its tip, and beyond the occlusion, filling up the cavity and replacing the mucous membrane, is the carcinoma.

In the first two cases, and probably in the third also, the patient had had more than one attack of ordinary appendicitis; from the histological appearances we can conclude that it is highly probable that in each case a certain amount of localised ulceration of at least the mucous membrane occurred, followed by cicatrisation in the process of healing. No doubt this causes considerable disturbance and separation of the epithelial cells of the mucous membrane, and in each of these cases a carcinoma has arisen at the situation of the damage.

As previously pointed out, these cases are of considerable interest in view of Ribbert's theory of tumour formation—viz., that tumours arise from a partial or complete separation of cells, or groups of cells, from their organic continuity—that is to say, from mechanical isolation.

Glasgow.

THE SURGICAL AID SOCIETY.—Under the presidency of the Lord Mayor of London the Surgical Aid Society held its forty-eighth annual meeting at the Mansion House on Dec. 6th. Mr. Samuel Watson was reappointed honorary treasurer and Mr. F. R. Fisher, the senior surgeon to the society, was appointed honorary consulting surgeon. Sir James Crichton-Browne proposed, and the Rev. J. Scott Lidgett seconded, a vote of thanks to the medical officers who gave their services to the society. This was carried unanimously. Mr. E. Muirhead Little replied. In moving a vote of thanks to the Lord Mayor Archdeacon Sinclair referred to the satisfactory report which had been issued. He pointed out that the total net income for the past year was nearly £28 400, that the annual subscriptions showed an increase of £887, life subscriptions an increase of £359, and contributions from local branches an increase of £329. There had been increase in expenditure for relief of £1562, but the cost of management had been reduced by £316. In the course of the proceedings the secretary announced subscriptions amounting to £271.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON A CASE OF ENCHONDROMA OF A PHALANX FOLLOWING INJURY.

BY THOMAS H. KELLOCK, M.C. CANTAB., F.R.C.S. ENG.

IN view of the importance which nowadays attaches to injuries sustained by workmen in the course of their occupation, any uncommon or unexpected sequel of such is worthy of record when the question of disablement and compensation arises.

In the case now reported there seems to be no reason to doubt that the injury received was the direct cause of the condition that resulted. Those who first saw the case considered the disease of the phalanx to be of a tuberculous nature; it was treated as such for some time and a very doubtful prognosis given as to the ultimate usefulness of the finger, which, being the index of the right hand, was of considerable importance and value. The finding that the enlargement was due to enchondroma materially altered the line of treatment to be adopted and also the prognosis both from the patient's point of view and that of his employers.

The patient was a young man, 18 years of age, an engine fitter by trade. His father had died from "brain fever," otherwise there was no family history suggestive of tuberculosis, syphilis, or new growths. When 3 years of age the patient was said to have suffered from "consumption of the bowels," and when between 6 and 7 he had measles. With these exceptions he had had no previous illnesses. In the course of his occupation he had often received blows on his fingers, but had never been seriously injured. In December, 1908, whilst at his work, his right hand was resting, palm upwards, on an iron plate waiting to receive a bolt which a fellow workmen was knocking out. The bolt came through and rested on the first phalanx of the index finger. The other man, thinking it was not through, gave it another hard blow, the result being that the patient's finger received the full force of this between the bolt and the iron plate. The finger was considerably bruised and painful, but he continued at his work until March 31st, 1909, when, finding it swollen and some limitation of movement at the first interphalangeal joint he first sought advice about it. Scott's dressing was then applied and the finger kept on a splint for two months, and after that it was kept in a plaster-of-Paris casing for a further ten months, during which time he did no work. He suffered no pain or inconvenience except that the finger "throbbed" if he got hot by any exertion.

When seen in March, 1910, the proximal phalanx of the right index finger was found to be considerably enlarged, the enlargement being of a fusiform shape and extending the whole length of the bone. It felt densely hard, but was not tender; the skin was neither adherent nor discoloured over it, but was a little thin and shiny from disuse. Flexion at the first interphalangeal joint was limited in extent, but what there was was easy and free, the interference with movement being apparently more mechanical than pathological. No enlarged glands could be felt either at the elbow or in the axilla. A skiagram showed the bone to be larger than normal; the centre appeared to be comparatively clear, but the peripheral parts very dense, as if the bone were a mere hard shell with well-marked external and internal surfaces. The condition was thought to be probably due to an unabsorbed collection of blood in the interior of the bone—a so-called "blood cyst."

An incision was made down to the bone in the long axis of the finger between the lateral nerve and the extensor tendons. The periosteum was very easily pushed back, exposing a markedly sclerosed condition of the surface of the bone. This was then opened with a gouge, the bone being brittle and breaking easily, almost like a dry egg-shell. The cavity was found to be filled with an almost dry gelatinous material of a light brown colour. This was easily scraped out, leaving a well-defined cavity the contour of which was formed of hard, smooth bone; the cavity was filled with decalcified bone, the periosteum brought together over the opening made by the gouge, and the skin sutured. Primary union occurred. On examining the tissue that had been removed it

was found to contain a large number of cartilage cells with a more or less homogeneous matrix.

The patient resumed work about six weeks after the operation. When seen in September last the bone was found to have diminished slightly in size. He had had no pain or inconvenience in it, and the movement at the joint was easy and free to the extent of a right angle.

Queen Anne-street, W.

NOTE ON A CASE OF IMMEDIATE SERUM REACTION.

BY T. THOMSON RANKIN, M.D. GLASG.,
AND
A. M. PRYCE, M.B., CH.B. EDIN.,
ASSISTANT MEDICAL OFFICERS, CITY HOSPITALS, LEEDS.

THE following case is of interest in so far as it shows an immediate reaction to a single dose of anti-diphtheritic serum.

A female infant, aged 21 months, was admitted to the Leeds City Hospitals on July 5th, 1910, suffering from diphtheria. On admission she received 5000 units of concentrated diphtheria antitoxin (P. D. and Co.) by subcutaneous abdominal injection. Within 15 minutes a profuse and typical urticarial eruption appeared on the face, arms, back, chest, and legs. This rash lasted two days and disappeared gradually; the highest temperature noted during its presence was 101·4° F. On the eleventh day of the disease and the seventh after the injection another urticarial eruption developed and the temperature did not exceed 100°. The patient did well and was discharged on August 24th. Prior to her discharge 2 c.c. of sterile water were injected subcutaneously without any reaction being made manifest.

The occurrence of immediate and accelerated reactions following repeated injections of anti-diphtheritic serum has been noted and recorded, but the appearance of serum phenomena so soon after a single injection has not come under our notice. To avoid the possibility of error, we injected the sterile water and inquired into the history of the child and mother. The failure of the sterile water to produce any reaction is evidence of the fact that the phenomena were due to the serum. We were able on close inquiry to exclude the usual causes of urticaria, such as unsuitable diet, drugs, &c.

It has been suggested that a woman who has had diphtheria antitoxin may transmit to her child a tendency to be abnormally sensitive to serum, as occurs in the case of guinea-pigs. We are able to exclude this possibility, as the mother of the child never had diphtheria or diphtheria antitoxin.

We are indebted to Dr. A. E. Pearson for his kind permission to publish these notes.

Leeds.

NOTE ON A CASE OF MUCOUS COLITIS SUCCESSFULLY TREATED BY VACCINE-THERAPY.

BY G. C. STEELE-PERKINS, M.D. EDIN., M.R.C.S. ENG., L.R.C.P LOND.

A FEMALE, aged 23 years, came to me on Oct. 1st, 1909, with a history of mucous colitis on and off (diagnosed as such by her medical attendants) for the past eight years. The present attack commenced six months ago. Her symptoms were loose motions, the passing of mucus and shreds of membrane, straining at stool, constipation, and pain and tenderness in the region of the ascending, but especially in the region of the descending, colon. She was feeling quite unfit to do anything, became easily tired, and was generally out of health.

Until Feb. 28th, 1910, I tried a variety of treatment, including rest, dieting, decoction of cortex simarubæ, massage of the colon, &c., but the patient showed no improvement. On the above date I sent specimens of her blood, urine, and fæces to Dr. J. W. H. Eyre for bacteriological examination, who on March 3rd reported as follows: "Urine: sterile. Fæces show that the normal bacillus coli is practically absent, but its place has been taken by streptococcus pyogenes longus and a bacillus having characters intermediate between the bacillus lactis aerogenes and bacillus pneumoniæ of Friedländer. Blood: Opsonic index to the streptococcus 0·7, and to the bacillus 0·6." Vaccines were prepared from each of these micro-organisms. From March 7th to May 31st I injected the patient with the prepared vaccines of both the streptococcus and bacillus, in doses from 5 millions to 25 millions, at intervals of about eight days.

The details of these injections and of the opsonic indices are as follows:—On March 7th and 14th, 5 millions each of the streptococcus and bacillus. March 18th: Opsonic index to streptococcus 1·3, to bacillus 0·9. 21st: 10 millions of the bacillus. 29th: 10 millions each of the streptococcus and bacillus. April 6th: Opsonic index to streptococcus 1·01, to bacillus 0·8. 7th: 10 millions each of the streptococcus and bacillus. 15th: Opsonic index to streptococcus 1·1, to bacillus 0·5. 16th: Streptococcus 10 millions. 20th: Bacillus 10 millions. 27th: Opsonic index to streptococcus 1·09, to bacillus 1·1. 28th, May 6th and 14th: Streptococcus 10 millions and bacillus 25 millions. May 18th: Opsonic index to streptococcus 1·0, to bacillus 1·2. 23rd and 31st: Streptococcus 25 millions, and bacillus 25 millions. On May 31st the patient told me she had not suffered severe pain for over six weeks, that she was considerably better in health, and was passing a much less number of shreds; there was no tenderness of abdomen. Dr. Eyre reported: "No streptococci in shreds from bowel."

From June 8th to Sept. 13th I injected the patient with the bacillus vaccine in doses from 25 to 50 millions at intervals of about a fortnight, and on the latter date the patient informed me that she had been feeling very well for several weeks. The details of these injections and of the opsonic indices are as follows:—June 8th: Bacillus 25 millions. 14th: Opsonic index to streptococcus 1·1, to bacillus 0·96. 25th, July 9th and 23rd: Bacillus 50 millions. July 28th: Opsonic index to streptococcus 1·6, to bacillus 1·2. August 5th, 22nd, and Sept. 2nd: Bacillus 50 millions. Sept. 7th: Opsonic index to bacillus 1·04. 13th: Bacillus 50 millions.

On Oct. 11th Dr. Eyre reported: "The specimens of fæces show a practically normal bacteriological flora. The normal bacillus coli was present in what I should consider normal numbers. The bacillus from which the vaccine was prepared has entirely disappeared, and so also has the streptococcus longus. A few colonies of streptococcus brevis (a normal inhabitant of the intestinal tract) were noted."

During the vaccine treatment the patient continued having careful massage of the colon, was dieted, and non-irritating aperients were given when necessary. The doses of the vaccine were regulated partly by the clinical symptoms and partly by opsonic estimations of the blood.

Oct. 12th: The patient continues in good health, feels quite well, and passes no shreds of mucous membrane.

Wimpole-street, W.

BRITISH DENTAL ASSOCIATION.—The annual meeting of the metropolitan branch of the British Dental Association was held in the school buildings of St. Bartholomew's Hospital on the evening of Dec. 7th, Mr. W. B. Paterson, dental surgeon to the hospital and president of the branch, in the chair. After the transaction of formal business, Mr. Paterson delivered an address, in the course of which he described the origin and growth of the dental department of the hospital, the scope of its work as a charity, and its teaching in the medical school. The department was founded in 1837, when Mr. Arnold Rogers was appointed the first dental surgeon, with the duty of visiting the hospital one day in the week. Upon his retirement in 1849 he was succeeded by Mr. Tracy, who in turn was followed by Mr. Alfred Coleman. In 1879 the department was reconstituted and met twice weekly. The department was now in charge of four dental officers and met daily. The dental teaching of medical students was carried out on definite lines, and quarterly classes were held for those about to commence surgical dressing in the wards. The elements of dental surgery were taught, and extraction operations practised in the dissecting rooms. Attendance at the casualty dental department and dressership in the department were open and free to all students, and were specially recommended to those who intended joining the Naval and Army Medical Services. After the address the members visited the great hall of the hospital, the new pathological block, and museum. The proceedings terminated with a conversazione in the library.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SURGICAL SECTION.

Septicæmia Hæmorrhagica.—Gastric and Intestinal Hæmorrhages.—Fractures of Patella.

A MEETING of this section was held on Dec. 13th, Mr. RICKMAN J. GODLEE, the President, being in the chair.

Mr. W. G. SPENCER read a paper entitled "Septicæmia Hæmorrhagica: Severe Capillary and Parenchymatous Hæmorrhage of Septic Origin." He said that there was a class of grave and fatal hæmorrhages which were not included under the subjects of primary or secondary hæmorrhages, nor could they be ascribed to any congenital lesion such as hæmophilia, nor to degenerative lesions such as occurred in Bright's disease or were induced by the toxic influence of alcohol. Indeed, those causes of hæmorrhage were excluded from consideration by the speaker, and none of the cases referred to were predisposed to hæmorrhage from those causes. The peculiarity of the hæmorrhage he proposed to discuss was that it might occur from a mucous or serous membrane without any naked-eye breach of surface; or it might happen from a raw surface without any special blood-vessel being opened; or if into an organ, there was parenchymatous hæmorrhage without any preliminary traumatism or degenerative process in that organ. Such hæmorrhages were well-known complications of the specific and tropical fevers, as well as of scurvy. One could not attribute such hæmorrhages to an excess of pulse-tension, for, indeed, the hæmorrhages, whether from the nose or gastro-intestinal canal, continued to recur when the patient had become very weak. In bringing forward cases which had come under his observation, he was well aware that he could deal only inadequately with the essential part of the subject—the bacteriology. For that was the clue to the treatment, whether by an antitoxin given immediately or by auto-vaccination as soon as possible. His attention was first drawn to the subject by Klein's experiments on a variety of streptococcus causing hæmorrhage. In 1897 Klein received from Dr. J. G. E. Colby of Malton fluid taken from vesicles on the skin of a man who two or three days before had been engaged in skinning sheep dead from puerperal septic œdema after lambing, the so-called "gargel." Klein cultivated a streptococcus from the material which, when injected subcutaneously into guinea-pigs, caused subcutaneous and intermuscular connective-tissue hæmorrhages around the site of inoculation, along with blood effusions into the pleural and peritoneal cavities. The same results followed the injection of cultures into rabbits and sheep. Returning to human pathology, there occurred cases of hæmorrhagic empyema and ascites. Oliver had described cases of thoracic empyema followed by fatal hæmorrhagic oozing from the wall of the cavity; the organisms found were the diplococci of Friedländer, not the pneumococcus. In those cases injury to an intercostal artery or pulmonary vessel was excluded. Hæmorrhagic ascites had proved very fatal, doubtless due to infection by organisms, but he was not aware of any definite report as to the organisms present. Under the term of purpura a collection of hæmorrhagic diseases were discussed in works on medicine. Some of those cases were traceable to streptococcal infection, especially when a complication of puerperal fever occurred. Melæna neonatorum formed another class of fatal hæmorrhagic disease. The acute hæmorrhages which complicated diphtheria of the fauces were very fatal. Acute hæmorrhages into the stomach, as shown by black vomit, constituted a grave complication. In medical practice they followed the specific and tropical fevers; in surgical practice they occurred late in such cases as intestinal obstruction, gall-bladder suppuration, and gangrenous appendicitis, and might follow operations when sepsis could not be prevented. He had seen that fatal termination in the various forms stated, but unfortunately he had no bacteriological information to give. Hæmorrhagic pancreatitis was a well-known form of parenchymatous hæmorrhage, in which the exact type of organism causing the affection could not yet be stated with certainty. There did not appear to be sufficient reason to ascribe the hæmorrhages to bacillus coli communis, which was the organism generally found in such abdominal complications. Dr. F. W. Andrewes had published the post-mortem examination of a case of muscular hæmorrhage following typhoid fever. Hæmorrhages of a similar character might be produced by poisons such as phosphorus and benzine both in human beings and, experimentally, in animals. It would seem likely that the actual influence on the blood-vessels was through the agency of toxins produced by such poisons, and therefore the actual production of the hæmorrhages might essentially not differ from those originated by organisms. He referred to cases of acute hæmorrhagic cellulitis in which on incision no distinguishable amount of pus escaped, but blood poured out most freely. Several grave cases of hæmorrhage from the kidney and bladder had come under his notice which could not be classed with common causes of hæmaturia. Hammersley had described a patient who had attacks of pain in the right kidney with severe hæmaturia which was relieved by removing an inflamed appendix, and he attributed the renal affection to infection spreading from the appendix. Eve recorded a case of fatal hæmaturia due to psorosperms. Posner in a man subject to attacks of hæmaturia found amœbæ. He had included in his paper cases which differed widely from one another. But they were all grave and obscure. Some cases of septicæmia hæmorrhagica had been certainly caused by streptococci. The occurrence of the hæmorrhage might be explained by supposing the organism to collect especially in contact with the walls of the blood-vessels. Under the effect of the toxins the walls of the vessels became weakened and gave way, so as to allow the escape of blood. That occurred without intravascular thrombosis, which in ordinary acute inflammation must be the chief factor in preventing hæmorrhage. Neither was there any massive collection of leucocytes at the inflammatory focus, so that very little pus formed. The identification of streptococci as the commonest organism suggested an immediate recourse to streptococcal antitoxin, whilst the identification of the particular organism was being made. The first case of success by the use of streptococcal antitoxin was reported by Ballance and Abbott. A finger was pricked at a necropsy on a case of suppurative peritonitis, and acute septicæmia set in, complicated by cutaneous hæmorrhages. Immediate relief followed the use of streptococcal antitoxin. When the infection was not due to streptococci, or was a mixed infection with staphylococci or bacillus pyocyaneus, the preparation and injection of an auto-vaccine should be carried out as quickly as possible. The extravasated blood clotted readily, and that explained the fact that the administration of calcium chloride had had no influence on the hæmorrhage.

Mr. JONATHAN HUTCHINSON read a paper on Gastro-intestinal Hæmorrhage, usually of septic origin, occurring after abdominal operations. He said that that form of hæmorrhage, shown as a rule both by hæmatemesis and melæna, was due in most cases to very small ulcers or erosions in the stomach wall (occasionally also in the duodenum, &c.). He narrated a case at length in which death occurred on the seventeenth day after cholecystectomy. The first operation was done for gall-stones and cholecystitis; at the same time an abscess above the liver was drained. After the onset of hæmorrhage on the ninth day the stomach was explored and one bleeding spot in its wall secured by ligature, another being cauterised. Twenty-three similar cases of gastric hæmorrhages after operation, occurring in the London Hospital in the course of three years, were analysed. It was found that the condition for which the operation was done was in 80 per cent. of a septic nature, suppurative appendicitis providing the majority—viz., 13 cases out of 24. In 3 out of the 24, acute ulcers of some size were found post mortem; in the rest small erosions only were present. One patient only recovered after repeated and severe hæmorrhage; all the others proved fatal. Sixteen cases of similar nature, in which no operation had been done, were also analysed. Those occurred in the medical wards of the London Hospital during the same period of three years. The disease for which those patients were admitted was of septic nature in the same proportion as those operated on—i.e., 80 per cent. It was certain that an alteration in the blood due to a poison usually of septic origin was the main factor in the

production of gastric erosions of this kind. If an operation had been performed it was a mere coincidence, except in the rare cases where it was responsible for abdominal sepsis. Hæmorrhage of that nature, whether occurring after an operation or as a complication of another disease, was of very grave prognosis. A few cases, however, proved that spontaneous recovery might ensue. Operative interference did not appear to hold out any material prospect of success in checking the bleeding, but further experience was required to decide that point. Out of the 40 cases analysed the only one in which it was tried was the one in which Mr. Hutchinson had operated.—The PRESIDENT suggested that in some of the cases the condition was not due to sepsis, but was to be attributed possibly to the influence of the anæsthetic.

The meeting concluded with the reading of a paper by Mr. A. E. JOHNSON on Fractures of the Patella without Separation of the Fragments.

CLINICAL SECTION.

Exhibition of Cases.

A MEETING of this section was held on Dec. 9th, Sir A. PEARCE GOULD being in the chair.

Dr. WILLIAM HUNTER showed a case of Addisonian Anæmia (Idiopathic Pernicious Anæmia). The patient, a male, came under observation in July, 1900, showing typical features of this disease—red-blood cells 25 per cent., hæmoglobin 35 per cent. The case was treated by strict oral antiseptic measures, combined with the administration of antistreptococcic serum. The recovery was immediate and striking; in three weeks the blood showed red cells 65 per cent., hæmoglobin 75 per cent., subsequently rising to 94 and 104 per cent. respectively, when the case was shown before the Clinical Society. The case was then described in a paper before the Royal Medical and Chirurgical Society in January, 1901. The patient had been under close observation ever since in order to thoroughly test the methods of treatment mentioned. A relapse occurred in the end of 1901, the red blood cells falling to 60 per cent., followed by rapid recovery—red blood cells 92 per cent. Another relapse at the end of 1902—red blood cells 50 per cent.; recovery in 1903—red blood cells 80 per cent. A severe relapse at the end of 1903, red blood cells falling to 30 per cent., followed by striking recovery in three months—red blood cells 90 per cent., hæmoglobin 120 per cent. The patient had remained without any relapse during the last seven years. The present condition of the blood is, red blood cells 105 per cent., hæmoglobin 115 per cent. The case showed, at the onset of the disease and during the first three years—1900–03—while he suffered from the relapses mentioned, the characteristic clinical features involving (1) glossitic gastro-intestinal disturbances; (2) hæmolytic changes with evidence in the blood and urine; (3) pyrexia; and (4) peripheral nervous disturbances. During the last seven years these features had been absent.—Dr. N. DALTON observed that the gastric cases of this affection were the best from the point of view of prognosis, apparently getting well with the administration of bismuth, excepting, of course, cases of pernicious anæmia following cancer.

Dr. JAMES GALLOWAY and Dr. W. J. FENTON showed a case of Stokes-Adams Symptoms in a lad aged 18 years. The patient was fairly well developed; there was no history of any serious illness till the month of May, 1910. He was then employed in an office in the City, and had passed through a hard winter's work. During the month of May he commenced to suffer from repeated partial fainting attacks, and for that reason medical advice was sought. When he came under observation the pulse frequency at the wrist varied from 32 to 40 per minute. Occasionally marked irregularity occurred, but the irregularity appeared to be always of the same type—two or three beats with long intervals, followed by a succession of beats with short intervals. The fainting attacks occurred with no warning—a slight exertion was often sufficient to bring them on. Occasionally he had lost consciousness for a very short time in these attacks, but usually they were transient and consciousness was not completely lost. On several occasions climbing to the top of an omnibus made him inclined to be faint. Rarely several fainting attacks had occurred in rapid succession. There was no evidence of valvular lesion nor of cardiac enlargement or hypertrophy. No other visceral disease was present. Since the commencement of his attack the patient had rested, but the conditions described persisted. Fainting attacks were less numerous. The sphygmographic and string galvanometer tracings kindly made by Dr. Thomas Lewis of the heart's action were shown, and gave evidence of very complete "heart-block."—Dr. F. J. POYNTON discussed the question whether the patient would get well or remain an invalid, and supposed that congenital affection of the bundle of His was against a good prognosis.—Dr. GALLOWAY said that he would do his best to bring the patient again before the section.

Dr. GALLOWAY showed a case of Multiple Telangiectases of recent origin. The patient, a man, aged 35 years, had been in the army, and had served in the West Coast of Africa, India, and Burma. He had probably had syphilis, but had no regular treatment. He was invalided out of the service from Burma on account of lung disease. There was now evidence of consolidation in patches throughout the right lung; there was a slight degree of fever, and a few tubercle bacilli were found in his expectoration. There was an enlargement of the liver. About 18 months ago he noticed the development of the red spots on the skin. These occurred mainly on the face, neck, and shoulders; several dozens might be counted. A few others existed on the body and on the lower extremities. They consisted of permanently dilated capillaries, radiating from a central point—large "spider-nævi." The centre of each system had a dark purple punctum which increased in size, forming in some cases an angioma of the size of a large pea. In some cases a considerable area of the skin was covered with the thread-like telangiectases, but without the elevated central point, as on the right side of the neck. They bled profusely when injured, and one situated on the edge of the left nostril had given much trouble for that reason. No telangiectases were visible on the mucous membranes; there was no hæmaturia nor melæna. Hæmoptysis had been very profuse. No history of a similar condition in his family was obtainable.

Dr. H. E. SYMES-THOMPSON showed a case of Infantilism. The patient was a female, aged 34 years, single; height, 3 feet 2½ inches; weight, 3 stones. Nothing abnormal was noticed until the patient was between 3 and 4 years old, when she ceased to grow. She went to school until she was 14, and learnt to write, sew, and knit, but not to read. Her memory was good, and she knew the numerals and alphabet. She was babyish in her ways, and was fond of dolls. The circumference of her head was 20½ inches. There was some kyphosis and scoliosis. The teeth were fair, the hair of the head was normal, but the mammæ were undeveloped, and there was no axillary or pubic hair. Skiagrams showed a backward condition of ossification, the epiphyses of the long bones not being joined to the shafts and the ossa innominata were incomplete. The family history presented nothing of note. The patient's general health was fair. The bowels were regular and the motions normal. The case did not appear to be secondary to rickets, syphilis, or any other disease, and it apparently fell into the classification of Hastings Gilford as an instance of primary infantilism, or ateleiosis.

Dr. F. PARKES WEBER gave details of a case of Ateleiosis in a man aged 42 years. In this patient physical development was said to have been arrested at about the age of 9 years. The case was exhibited to the Section for the Study of Disease in Children at the Royal Society of Medicine on May 27th, 1910.

Dr. W. ESSEX WYNTER showed two cases of Henoch's Purpura. Case 1 was a female, aged 11 years, admitted on Sept. 26th, 1910. She had had rheumatism when 4 years of age, but no other illness. There was pain in the abdomen for one week, independent of food; and for four days pain, swelling, and stiffness in the left wrist. Purpuric spots appeared on the leg at the commencement of the illness, and on admission extended to all the limbs. Systematic examination disclosed no abnormality of organs; splenic dulness extended to the costal margin, but the edge could not be felt. Pain was complained of in the epigastric and umbilical regions, and there was some general abdominal tenderness. The patient vomited on the day after admission, some blood being present in the vomited matter. On Oct. 1st there was considerable intestinal hæmorrhage, and that recurred on the 4th. On the 15th a fresh crop of purpuric spots appeared on the right foot. On the 24th, the symptoms having subsided, the patient was allowed to get up, but on the 28th fresh purpuric spots appeared on the legs, and there was some œdema of the left foot. On Nov. 7th, after getting up for

some days, fresh purpuric spots appeared on the inner side of the left ankle, and on the following day blood and albumin appeared in the urine. Microscopically blood corpuscles were seen, but no tube casts; no globulin was present and no œdema. The albumin had gradually diminished, but was still present and varied in amount. Weight, pulse-rate, temperature, respiration, and quantity and specific gravity of urine and blood showed no departure from normal. Throughout there was marked pallor of the face, the lips remaining red. Case 2 was a male, aged 13 years, admitted on Oct. 19th, 1910. A similar illness occurred two years before. Five days before admission pains were felt in the legs and purpuric spots appeared. The patient vomited the day before admission. When first seen there was abdominal pain and a purpuric eruption of the legs and feet; the ankles swelled. Systematic examination disclosed no abnormality of organs; splenic dulness extended to the costal margin, but the edge could not be felt. The symptoms subsided in three days and the patient was allowed to get up on Oct. 28th. On Nov. 7th there was a fresh purpuric eruption on the right leg and the left elbow. On the 8th there were blood and albumin in the urine; corpuscles and blood-casts were seen in deposit but no epithelial casts; no œdema. Several attacks of vomiting occurred. On the 24th there was intestinal hæmorrhage. Pulse- and respiration-rate, temperature, quantity of urine, and body-weight remained normal. The blood examination showed 19,000 leucocytes, red cells 4,800,000, and 65 per cent. hæmoglobin.

Dr. GALLOWAY described a case of a child who came to him with symptoms similar to the two cases shown. The symptoms in his case followed indulgence in nuts and blackberries. He asked if it was a wise thing to isolate such cases under a special name.—Dr. F. DE HAVILLAND HALL quoted a case in which there was a difficulty of diagnosis between Henoch's purpura and intussusception. He mentioned oil of turpentine as a useful remedy in purpuric cases.

Mr. LIONEL E. C. NORBURY showed a case of Perforated Tuberculous Ulcer of the Ileum. The patient, a male, aged 39 years, had a history of occasional attacks of epigastric pain; there was no history of constipation. He was admitted with eight hours' history of acute abdominal pain, chiefly in the lower half of the abdomen. The patient was doubled up; he vomited later. On examination the temperature was 100° F., the pulse 100 per minute, and respirations 20. There were tenderness and rigidity of the abdomen, chiefly of the lower half; liver dulness was normal. An operation was performed nine hours after the acute onset. Exploratory cœliotomy—no free gas; small amount of free fluid in abdominal cavity, and lymph; stomach and appendix normal; hard swelling found involving small intestine 2 feet from cæcum; lumen of bowel much narrowed; small perforation in wall of bowel at that situation; resection of 4 inches of ileum with ulcer; end-to-end anastomosis; dry sponging of pelvic cavity; suture of parietes, no drainage. There was an uninterrupted recovery. Microscopical examination proved ulcer to be "tuberculous." Examination at operation showed no other ulcers in the small intestine.

Mr. LAWRIE H. MCGAVIN showed a case of Varix of the Right Superficial Epigastric Vein. The patient was a male aged 52 years. He stated that in 1901, when jumping overboard to save a man, he strained himself. He suffered from severe pain in the stomach at the time, which "doubled him up." The veins on the abdomen became enlarged after that, and had been increasing in size since. The patient now showed well-marked varix of the superficial epigastric vein of the right side. The vein was extremely tortuous, and presented lateral dilatation and pouching of the wall, especially in the region just above the umbilicus. The condition might possibly have been brought about by rupture of the vessel wall, with consequent thrombosis.

Mr. MCGAVIN also showed a case of Trunk Lesion of the Fifth and Sixth Cervical Nerves; keloid development in scars. The patient was a male aged 6 years. He was admitted into hospital on May 13th, 1910, and, as a result of being run over by a cart, was suffering from a wound of the face and fractured left clavicle. The wounds were cleaned up and sutured and the clavicle put into position. It was noticed that there was paralysis of all the nerves of the arm, with the exception of the ulnar. It was thought at the time that that was due to pressure from effused blood, but as the condition did not clear up a flap was turned back from the shoulder and the clavicle exposed (June 9th). The outer end of the clavicle had become depressed and was producing pressure. That was lifted up and the fractured ends were wired. The patient was discharged on June 23rd. The wound had healed perfectly, and the paralysis was apparently clearing up. Returning to hospital a week ago—i.e., six months after—it was found that every scar had become keloid in character, both those produced at the time of the accident and those subsequently by operation.

Mr. L. VERNON CARGILL showed a case of Double Proptosis due to a growth invading each orbit. The patient was a male aged 20 years. He was a sailor and native of Barbados; now an in-patient at King's College Hospital. The family history was unimportant. His general health had been always good. He had a sore on the penis two years ago. Last June his attention was first drawn to a painless swelling under the nasal half of the upper lid of the right eye. He went to the "Dreadnought" Hospital in July, and there was then proptosis of both eyes but more marked on the right side. There was a bulging forward of both upper eyelids caused by a soft, non-pulsating swelling beneath, situated in the upper and inner part of each orbit. The ocular movements were slightly restricted in all directions, but more particularly upwards, but there was no ocular paralysis and no diplopia. The optic discs were normal, there was no lesion to be seen in either fundus, the pupils were normal, as were the visual acuity and the visual fields. There was no evidence of any of the cranial nerves being affected. At the end of July Dr. R. E. Bickerton removed a small portion of the growth beneath the right upper eyelid for examination. Photographs were taken on August 11th which showed the conditions then present. In them the right eyelid, which had been recently incised for the removal of a portion of the growth, was drooping. The bulging of the eyes and the orbital swellings had since then gradually increased and been accompanied by some occasional pain at night between the eyebrows, over the root of the nose, and in the temples. His proptosis was now so extreme, especially on the left side, that he was unable to close his eyelids properly, and epiphora had become troublesome and constant. The movements had become more limited, the tumours had increased and extended further round on the nasal sides of each orbit, and the eyes were displaced downwards and were further apart, so that the distance between the pupils was as much as 78 millimetres. The caruncle and plica semilunaris on each side were swollen, chemosed, and injected. A swelling had appeared in the forehead, chiefly over the region of the left frontal sinus, and extending to the upper margin of the left orbit, which was tender, felt hot, and pitted on pressure, the bone beneath feeling raised. That showed slightly in the full-face photograph. Some enlarged glands were to be felt on both sides of the neck and there was a soft glandular-like swelling under the tongue. Eyes and vision still remained normal. There was no loss of smell. Dr. StClair Thomson had kindly examined the nose and sinuses and reported as follows: "The nose and post-nasal space are quite free and healthy. There is no stenosis, pus, or new growth in any of these spaces. Transillumination shows both maxillary sinuses equally translucent. There is tenderness over both frontal sinuses, more over left, where there is slight œdema. The growth might be primary in the frontal sinuses." There was nothing further abnormal to be felt or detected in the chest, abdomen, or elsewhere. The blood examination gave "R.B.C., 4,430,000; W.B.C., 9000; hæmoglobin, 75 per cent.; polymorphs, 31 per cent.; eosinophiles, 9 per cent.; monomorphs, 55 per cent.; hyalin bodies, 5 per cent.; very numerous platelets." His colour precluded any note being added as to his complexion. A few days ago Mr. Cargill removed a portion of the growth from the left orbit, sections of which had been examined by Dr. Emery. They showed the structure to be that of a hæmangiolymphadenoma, consisting of young connective tissue with the formation of definite lymphatic follicles around the blood-vessels, the growth having started in the perivascular lymphatics. The sections of the first portion removed by Mr. Bickerton were first regarded as round-celled sarcoma but they showed the same structure in an earlier stage. A. Q. Silcock in 1888 showed a case[1] of a child, aged 9 years, with a tumour

[1] Transactions of the Ophthalmological Society, vol. viii., p. 53.

affecting both orbits. The microscopical examination was said to present the characters of round-celled sarcoma, but the same mistake might have been made in that case as in the early sections from the present one. Collins[2] described the case of a child, aged 1¾ years, which had separate tumours in the two orbits. Death ensued; and microscopical examination showed them to resemble lymphatic gland tissue, and there were deposits of a similar character which had not been discovered during life in most of the organs of the body. There was no enlargement of the external lymphatic glands, although those of the chest and abdomen were extensively involved. He referred to five similar cases in the literature, occurring at the ages respectively of 70, 57, 48, 33, and 4½ years, in addition to Silcock's case alluded to above.

Dr. G. A. SUTHERLAND and Mr. F. F. BURGHARD communicated a paper on two cases of Splenectomy for Splenic Anæmia, which will be published in THE LANCET.—Dr. F. DE HAVILLAND HALL described a case in which success had followed splenectomy.—Dr. H. D. ROLLESTON declared that his experience was that the operation had not been followed by success, and Sir A. PEARCE GOULD related the facts of a case of splenectomy with good recovery, the patient leaving hospital in excellent condition, but returned subsequently suffering from a plethoric condition, and died eventually from gastric and œsophageal hæmorrhage.

Dr. M. A. CASSIDY and Mr. C. M. PAGE demonstrated a method of determining the Absolute Pressure of the Cerebro-spinal Fluid.

OBSTETRICAL AND GYNÆCOLOGICAL SECTION.

Operations for Cancer of the Uterus.—Exhibition of Specimens.

A MEETING of this section was held on Dec. 1st, Dr. H. MACNAUGHTON-JONES being in the chair.

Dr. ARCHIBALD LEITCH read a paper on the Pathological Bases of Operations for Cancer of the Uterus. He considered that it was impossible to determine from clinical or histological examination the exact extent of cancerous disease in any given case. Hence it was justifiable to conclude that the only way of obtaining a radical extirpation of the disease was to apply to every case of cancer of the uterus a technique which was designed for the most advanced. Statistics had shown that 55 per cent. of cases were free from visceral or glandular metastases at the time of death, but these figures only applied to dissemination outside the pelvic cavity. Three lymphatic tracts were described: (1) to the inter-iliac glands; (2) to glands along branches of the internal iliac artery; and (3) to para-rectal glands. The last set were very rarely affected, in spite of the supposed frequency of invasion of the utero-sacral ligaments. The inter-iliac glands were the most important, and were in communication with another set on the outside of the common iliac artery. Both sets should be removed when there was evidence of glandular infection. Along the course of the ureter, through the broad ligament, lymphatic infection of the cellular tissue occurred, and by fibrotic contraction, as well as by direct invasion of its walls, the ureter became constricted, and hydronephrosis ensued in no less than 75 per cent. of all cases. Invasion of the vagina by cancer of the cervix occurred in all but 2·5 per cent. of cases; this was explained by the rich anastomosis of lymphatics between the cervix and upper segment of the vagina. Thus the excision of a wide cuff of vagina in Wertheim's operation removed a highly dangerous tissue. The bladder was involved in two-thirds of post-mortem cases, and the rectum in one quarter of the cases; while vesical perforation occurred in 44 per cent., and rectal perforation in 16 per cent. of cases. Free and timely removal of the upper segment of the vagina prevented the occurrence of these distressing and hopeless sequelæ.

Mr. C. P. CHILDE read a paper on Wertheim's Operation for Cancer of the Uterus. He based his remarks on 23 operations which he had performed. He had rejected no patient on account of age, the oldest operated upon being 65 years. The delay of patients in seeking advice was referred to, the average time from the onset of symptoms till patients came to operation being in his cases 9·4 months, and amongst those who had passed the menopause and in whom mistakes were therefore less excusable 9·2 months. Even amongst those who had applied within six months the disease had nearly always made considerable progress. He had had only one early case. After emphasising the necessity of examination under general anæsthesia and a microscopic confirmation of the nature of the growth in every case prior to operation, he next drew attention to the fact that in many advanced cases, especially in elderly women, the general health remained good. Some details and complications of the operation were illustrated by a reference to his cases. There had been one instance of ureteral fistula, due to wound of the ureter, which had been cured by subsequent lumbar nephrectomy. After alluding to implication of the bladder and rectum, he came to the important question of the routine removal of lymphatic glands, and condemned it on the following grounds:—(1) It must greatly prolong the operation and increase the primary risk; (2) inasmuch as glandular infection as a rule is late, the risk may frequently be added without any necessity for it; (3) as it is impossible to remove all the glands it is probably useless; and (4) where glandular infection has occurred, recurrence almost invariably takes place and life is not saved. Five patients had severe post-operative shock, none had died from it. He was of opinion that if cases were suitably selected, and the surgeon had had sufficient experience to perform the operation in a reasonable time, there was little to fear from shock. Sepsis was the most serious complication. It frequently attacked the abdominal wound, and primary union had only occurred in about one-half of his cases. Sepsis attacking the pelvic wound had accounted for the only two deaths in his series. His immediate mortality for all cases was 8·6 per cent. Mr. Childe finally contrasted the operation with vaginal hysterectomy in regard to its primary mortality and ultimate results. He thought the idea of the high primary mortality was exaggerated, and showed by a reference to his own cases and those of other operators that for like stages of the disease it was no higher than that of vaginal hysterectomy. It was the advanced cases which furnished the high mortality (about 20 per cent.), and these could not be attacked by the vagina at all. It was Wertheim's operation or nothing as far as radical treatment was concerned. For ultimate results, continental returns must be present be consulted, as the operation had not been performed long enough in this country to furnish the requisite data. By a reference to the work of many well-known continental operators, it was shown that there had resulted a percentage of cures and a prolongation of life such as the records of vaginal hysterectomy had not approached. In conclusion, Mr. Childe considered Wertheim's operation superior to vaginal hysterectomy in every particular for the following reasons: (1) It was exploratory in the first instance, and enabled the surgeon, after opening the abdomen, to decide with accuracy whether the case was suitable for radical treatment or not. 2. In cases comparable with vaginal hysterectomy its primary mortality was just as low. 3. It was a more scientific operation than vaginal hysterectomy, which was a shot in the dark. 4. It was on all fours with the more extensive operations for cancer elsewhere, which had been performed of late years, and which had given infinitely better results than the old partial operations. 5. There was evidence to show that it did give better results than vaginal hysterectomy. 6. If infected glands were present in early cases (though this was exceptional), it permitted of their removal. 7. It increased the percentage operability, and enabled more advanced cases to be dealt with. This he considered the least of its advantages. It was in the early cases that the good results were to be expected.—A good discussion ensued, to which the readers of the papers replied.

The following specimens were exhibited:—

Mr. J. D. BARRIS: Fibromyoma of the Uterus, which had caused acute obstruction of the small intestine.

Mr. DOUGLAS DREW: (1) Sarcoma of the Uterus; and (2) case of supposed Hermaphroditism.

Miss A. L. MCILROY: Hæmatosalpinx with Torsion of its Pedicle.

SECTION OF ANÆSTHETICS.

Hypnotism in Surgical Anæsthesia.

A MEETING of this section was held on Dec. 5th, Dr. W. J. MCCARDIE, the President, being in the chair.

Dr. EDWIN L. ASH read a paper on Hypnotism in Relation to Surgical Anæsthesia. The work of Dr. Esdaile, who served the old East India Company, he said, formed a starting-point from which to consider scientific work in this connexion. It was well known that he performed hundreds

[2] Reports of the Royal London Ophthalmic Hospital, vol. xiii., p. 248.

of operations on patients in the state of hypnosis in India. No one else had ever been able to repeat Esdaile's results. When a deep stage of hypnosis was obtained it afforded the condition of an ideal anæsthesia with no disagreeable preliminaries and no possible serious after-effects. But the difficulty was that the requisite state could only be induced in comparatively few people—roughly about 1 in 10 or 12. It was possible that some rapid, certain, and painless method of inducing deep hypnosis might some day be found, and then it was probable that this method would supersede all others for anæsthetic purposes. The theory of this process was obscure. Probably it was largely owing to concentration of the attention to some particular object or idea in the hypnotic state that consciousness to painful stimuli was lost. In hypnotic anæsthesia two factors have to be considered: 1. There was an "analgesia" due to the deep state *per se*. This was shown by blunting of perception to moderate stimuli—e.g., pin-pricks. But it was not protection against strong stimuli—e g., faradic brush. Therefore it was useless from a surgical point of view. 2. Anæsthesia produced by suggestion in the hypnotic state. This was reliable and to some extent controllable in satisfactory subjects. It was possible also to produce anæsthesia in some people who responded well to hypnotism by giving suggestions that were to bring about the required effect at some future date—that is, by post-hypnotic influence. This, again, was too uncertain to be of practical value in surgery. Consequently, the uncertainties and waste of time certain to ensue from attempting to make use of hypnotism for anæsthetic purposes placed it for the time being out of the range of practical politics. However, in the case of patients for whom a general anæsthetic was undesirable there was no reason why their suitability as subjects for hypnotic suggestion should not be tested some days before the date fixed for an operation. In any case, for urgent operations the method was quite inapplicable in the present state of our knowledge. Again, although hypnotism was so untrustworthy as an anæsthetic agent, there was a great field for the use of simple suggestion as an aid to anæsthetics. An arrangement by which a nervous patient about to be operated on could receive the benefits of "suggestion" for some time before the operation would unquestionably result in the anæsthetic being taken very much more satisfactorily than might otherwise be the case, and the advantages to the surgeon both during the operation and in the light of after-results would probably also be great.

Dr. C. LLOYD TUCKEY considered that to attempt to anæsthetise a person in an excited condition would in most cases be useless. Surgical anæsthesia had occasionally been produced by post-hypnotic suggestion alone, and suggestion without hypnotism was often sufficient to inhibit pain. He instanced an anæsthetist at a dental hospital who became very successful in gauging the susceptibility of persons to suggestion from their appearance, and could often produce anæsthesia in favourable cases by using an empty gas bag. Dentists had told him also that "Christian Scientists" could often stand the extraction of teeth without apparently feeling any pain. He considered that a "burly policeman" represented a type favourable to hypnosis.

Dr. S. H. NATHAN had also practised hypnotism fairly considerably. He found that the people who came to him to be hypnotised fell largely into two groups: first, highly neurotic individuals for whom hypnotism was a last resource; and secondly, persons who looked on it more or less as a joke. Neither of these groups represented favourable subjects. On one occasion when giving a demonstration on hypnotism he had seven cases from an institute for retired soldiers on whom to demonstrate. All seven were readily hypnotised. He considered that it was difficult to gauge accurately the degree of anæsthesia in a hypnotised person. A patient who had not responded to a pin-prick might shout out at an incision.

Dr. H. E. WINGFIELD had used hypnotism as an anæsthetic both in dental and confinement cases; in the latter it had certainly been of service. There were many curious and interesting points about hypnotic anæsthesia; general anæsthesia might be obtained or, when desired, one limb only might be rendered anæsthetic, rigidity appearing first and being followed by anæsthesia. A patient might be at the same time anæsthetic and hyperæsthetic in the same part; for instance, any *downward* touch on a limb might be unfelt, but the slightest *upward* touch be felt acutely.

The PRESIDENT discussed the question how far hypnotic suggestion might be used as an aid to ordinary anæsthesia—i.e., in diminishing after-effects, fear before an operation, or possibly enabling anæsthesia to be maintained with less anæsthetic, as in using morphia. He asked what was the effect of hypnosis as regarded the corneal reflex, the relaxation of the muscles, and the blood pressure.

Mrs. F. M. DICKINSON BERRY asked whether Dr. Ash considered that success or the reverse in hypnotism depended solely on the subject, or whether the hypnotiser was not also a factor.

Dr. ASH, in reply, said he thought suggestion should be a great aid to the anæsthetist, and the more suggestion the less chloroform. As regards after-effects, where they were due to toxic absorption, as was probably usually the case, they would not be affected by suggestion. Confidence in the result to be obtained on the part of the hypnotiser was certainly a factor in success, but beyond that he thought the hypnotiser was unimportant. There were certainly racial differences with regard to susceptibility to suggestion, black races being as a rule much more susceptible than white.

MEDICAL SOCIETY OF LONDON.

Acromegaly.

A MEETING of this society was held on Dec. 12th, Mr. CHARTERS J. SYMONDS, the President, being in the chair.

Dr. DAVID FERRIER, in the course of a paper on the Pathology of Acromegaly, said that in spite of all that had been written the points of agreement with reference to the pathology of acromegaly were still comparatively few, and that the more he studied the subject the more obscure it seemed to become. Acromegaly occurred most commonly about the period of adolescence and affected both sexes about equally. It varied in duration from a few years to 30 or more. The onset was insidious and the disease might exist for many years before its true nature was recognised either by the victim himself or his friends. The patient complained at first of various subjective symptoms, such as headache, pains and paræsthesia of the limbs, and general malaise. Sooner or later the characteristic changes became manifest in the head, hands, and feet. The hands became enlarged, the increased dimensions being due mainly to the skin and cutaneous tissues. Sometimes there was an increase in length, but more commonly the increase was in width, and the hands assumed a spade-like or battledore appearance. They were firm in consistence, the cutaneous folds exaggerated, and the fingers straight, and as large at the tips as at the base, constituting the so-called sausage-fingers. The enlargement did not usually extend beyond the wrist, so that it was all the more striking by comparison with the normal forearm. The feet were similarly affected; they were thickened, flattened, and the ridges and furrows markedly accentuated. The head was enlarged, and all the normal tuberosities and muscular attachments exaggerated, coarse, and rough. The face was oval, the forehead low and apparently receding, the orbits were thickened, the frontal and maxillary sinuses enlarged, and the zygomatic arches prominent. The body of the lower jaw in particular was hypertrophied, and the alveolar border extended beyond that of the upper jaw, constituting decided prognathism. The features were coarse, the nose, lips, and ears thickened, and the tongue over-filled the mouth, and tended to protrude between the teeth. The mucous membranes of the nose, pharynx, and larynx were redundant, and the voice was husky or hoarse. The neck was thick, and there was generally kyphosis in the upper dorsal region, and a tendency to protrusion of the lower end of the sternum, so that a Punch-like figure was developed. Vision was frequently impaired, more especially in the form of bi-temporal hemianopsy. Exophthalmos was common, and there might be ptosis or some other form of oculo-motor paralysis. The appearance of strength was illusory. The muscles were feeble and often wasted. The heart was weak and might be irregular, and there was a tendency to pant on exertion. Polydipsia and polyuria were common, and glycosuria had been observed in a large number of cases. Often there was a great tendency to somnolence. Impotence in the male and amenorrhœa in the female were the rule. The changes in the soft parts were largely due to hyperplasia of the connective tissues, and in the osseous skeleton to an exaggeration of the normal bosses, tuberosities, and roughnesses

which formed the points of the musculo-tendinous attachments. The periosteum was thickened. Osteophytes were common, and the vascular canals were numerous and dilated. The forms of enlargement of the pituitary body that had been found had been variously described as hyperplasia, adenoma, colloid degeneration, sarcoma, glioma, carcinoma, teratoma, and many others; but there was reason to believe that there had been great laxity in the nomenclature employed by different observers. The pituitary body was a small reddish mass, about ½ gramme or 7–8 grains in weight, filling the sella turcica, and attached to the infundibulum through a small opening of the pouch of dura mater in which it was enclosed. It consisted of two lobes, the anterior, somewhat bean-shaped, and the posterior, which fitted into the concavity of the anterior. The anterior was developmentally a diverticulum (Rathke's pouch) of the buccal ectoderm. That in time became constricted from the oral cavity by the development of the base of the skull, and the canal usually became obliterated. In certain cases, however, it remained patent, and formed the cranio-pharyngeal canal. It had been stated by Levi[1] that that was frequently, if not constantly, present in acromegaly and giantism, indicating that the basis of those conditions was probably laid down at a very early period of development, before the cranio-pharyngeal canal had become closed. At the pharyngeal end of that canal Erdheim, Haberfelt, and others had demonstrated the presence throughout life of a glandular structure similar to the anterior lobe of the pituitary and probably performing the same functions, and liable to the same diseases as the anterior lobe of the pituitary body itself. The existence of that pharyngeal pituitary body might perhaps explain some of the difficulties which had arisen in regard to the pathological findings. The anterior lobe was composed of epithelial cells arranged in trabeculæ, and surrounded by a rich network of thin-walled capillaries and lymphatics. The cells were of two kinds—chromophile and chromophobe—the former staining either with eosin or the basic dyes, the latter not. Intermediate forms were also described, but it was probable that they were not really different, but only different physiological conditions of the same cells. The posterior lobe was developmentally an evagination of that part of the embryonic brain which ultimately became the third ventricle. The cavity became obliterated in man, though in some animals, such as the cat, it remained patent. The posterior lobe was composed of connective tissue and neuroglia, but contained no true nerve cells. Between the anterior and posterior lobes there was a cleft, the remains of the original buccal diverticulum. The part of the posterior lobe adjacent to that cleft was covered by a special epithelium; it was called the pars intermedia The cells of that epithelial layer somewhat resembled those of the anterior lobe, but they were less distinctly granular and were arranged in islets or nests, many of which were hollowed out and filled with a colloid-looking material. That colloid material was supposed by some to be the secretion of the pituitary cells, though the views were somewhat divergent on that point. It was assumed that the secretion of the anterior lobe passed directly into the blood-vessels, while that of the pars intermedia found its way through the posterior lobe into the third ventricle. Extirpation experiments had been carried out by various experimenters and on different animals and with most discordant results. Those were, no doubt, largely explicable by the differences in method and extent of the lesions that had been established. The symptoms resulting from complete removal of the pituitary body had been described under the name of cachexia hypophyseopriva. The chief symptoms of that condition were a lowered temperature, fall of blood pressure, spasmodic twitchings, and a peculiar arching of the back; the animal became lethargic, and ultimately passed into a state of deep coma. It had, however, been shown by Cushing and his colleagues, and his observations had been confirmed by Biedl, that the removal of the posterior lobe of the pituitary body caused no obvious ill-results. Complete removal of the anterior lobe alone, however, produced the same effects as the removal of the whole gland. Partial destruction of the anterior lobe in young dogs led to results of great importance in reference to a certain symptom-complex (Frohlich's syndrome) not infrequently observed in man in connexion with pituitary tumours. There was an increase of fat, which in some cases amounted to adipositas universalis, hypoplasia of the generative glands, and loss or diminution of sexual power. With that there was a condition of infantilism and retardation of development. Occasionally, also, there were polyuria, polydipsia, glycosuria, and falling out of the hair.

Dr. A. KEITH gave a lantern demonstration of the Features and Modes of Development of the Skeletal Abnormalities which characterise Acromegaly.

A short discussion followed, in which Dr. A. MACPHAIL, Mr. J. E. S. FRAZER, Dr. ROBERT JONES, and Dr. R. H. SCANES SPICER took part.

[1] L'Encéphale, May 10th, 1910.

HARVEIAN SOCIETY OF LONDON.

Treatment of Syphilis.

A MEETING of this society was held on Dec. 8th, Dr. M. HANDFIELD-JONES, the President, being in the chair.

Mr. J. ERNEST LANE read a paper on the Treatment of Syphilis, restricting his remarks to the position occupied by the arsenical compounds, atoxyl, arsacetin, soamin, orsudan, and the more recently introduced "606." Whilst admitting their undoubted value, he recalled the fact that irremediable blindness had followed the use of some of them, which had led him to abandon them. Speaking of "606" he deprecated the advertisement it had received in the lay press. He referred to the excellent results obtained with it by Professor Wechselmann, from whose description in the journals it might be imagined we had arrived at a new epoch in medicine. But there was another side to the picture. He thought that enthusiasts had greatly minimised the pain produced by the injection. Ehrlich himself now admitted that there were many conditions in which the employment of "606" was inadvisable. Two cases of blindness had been recorded and two others hinted at. Twelve deaths following its use were incontestable. Early recurrences of symptoms were frequent, and the drug had not been long enough in use for anyone to speak positively on the question of late recurrences. He had submitted some of his own cases to injection by Sir Almroth Wright and Mr. J. E. R. McDonagh. The results were in the main favourable so far as he could judge in so short a time, but no better than he would have expected from mercurial treatment. One case of syphilitic ulceration improved temporarily, but soon relapsed; another injection was given, followed again by improvement and other relapse, the ulceration spreading to twice its former size. The condition was now improving on intramuscular injections of grey oil. This case had been somewhat prematurely recorded in THE LANCET as one of the successes of "606." Another case was malignant syphilis which had resisted mercury and receiving no benefit from "606" ultimately died some ten weeks after the injection. Other cases were mentioned in which improvement was not particularly satisfactory, although the Wassermann test became negative. He showed a chart in which the temperature went up to 104°F. after the injection, and hyperpyrexia was present every evening for ten days following. Of his 17 cases five certainly called for no enthusiasm. Syphilis was a mild disease, generally perfectly amenable to mercury; intolerance of that drug was rare, and would be the only justification for looking elsewhere for a remedy. In appropriate cases "606" was a valuable addition to our therapeutical stock. Laboratory research in syphilis, as in other diseases, was of great importance, but should not replace the results of clinical experience.

Dr. W. D'ESTE EMERY then gave a brief outline of some of the modern ideas on the Pathology of Syphilis, dealing especially with the nature of the spirochæta pallida, the processes which took place in the body during the disease, and the question of immunity thereto. He dealt especially with the Wassermann reaction, claiming for his own modification the advantages of rapidity and accuracy. He urged particularly the importance of testing all cases quantitatively, and recommended the method of using various dilutions of a standard antigen, so as to determine the weakest by which the complement is completely absorbed. He also vindicated the use of methods depending on the absorption of the natural complement pre-existing in the blood, basing his experience on a study of over 500 sera. He believed that when a quantitative method was used and interpreted in the

light of the clinical history the percentage of error was extremely small.

Sir ALMROTH WRIGHT dealt with the matter from the laboratory standpoint. He considered that "606" undoubtedly caused the disappearance of the spirochæte and therefore cured syphilis, clinical manifestations to the contrary notwithstanding; these he thought were probably due to a secondary streptococcal or staphylococcal infection. He suggested that surgeons had a convenient conscience which allowed them to perform operations with a well-ascertained and sometimes high mortality but which did not justify their employing this remedy with its infinitesimal risks.

Mr. ARTHUR SHILLITOE related some remarkably successful results from the use of "606" in his practice.

Mr. CAMPBELL WILLIAMS drew attention to three deaths following the injection of "606" additional to the 12 mentioned by Mr. Lane, gave cases within his experience in which relapses had occurred, and criticised the so-called chemical constitution of "606." In view of the risks attaching to its use, he suggested a form to be signed by the patient for the surgeon's protection. Many of the cases reported as having been cured by "606" were nervous affections generally regarded as para-syphilitic, and on which theoretically it should have no action. If it were ultimately found to have this specific action they would have to alter their views as to their pathology.

Mr. LANE, in his reply, argued that there was no analogy between an operation performed for the cure of a serious, and possibly fatal, disease and the treatment of the mild type of syphilis present in this country.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

Municipal Control of Pulmonary Tuberculosis.

A MEETING of this society was held on Dec. 9th, Dr. J. F. J. SYKES, Vice-President, being in the chair.

Dr. WILLIAM ROBERTSON, medical officer of health of Leith, introduced a discussion upon the Municipal Control of Pulmonary Tuberculosis. After stating that Leith had followed Brighton in adopting the principle of utilising disused wards at an isolation hospital for the treatment of phthisis, he expressed the opinion that every sanitary authority ought to adopt some scheme for dealing with the disease, and that neglect to employ some form of administrative machinery was evidence of a lack of appreciation of present-day hygiene. He then reviewed the advantages of compulsory as opposed to voluntary notification of phthisis. In Scotland sanitary authorities were empowered to make the disease notifiable, but they must first prove to the satisfaction of the Scottish Local Government Board that active steps would be taken to supplement notification. This implied the appointment of a special staff and the reservation of beds for the treatment of late or early cases. He considered that the best form of notification should be framed on the lines of the Sheffield sections with an additional provision requiring removal of cases which the medical officer of health considered were unsuitably housed or where precautions advised were not being adopted. In Leith, where compulsory notification is in force, those cases only were visited opposite whose names there were no stipulations made as to visitation, &c. There were now treated in an idle pavilion of the Leith isolation hospital about 20 patients. Advanced cases were not accepted, and every case notified for removal was examined by the medical officer of health or his assistant so that a standard of suitability had been established. Occasionally patients had been retained for nearly a year, but in the interval they had been taught to be useful members of the hospital staff. The average period of residence was three months, and this, especially with the very early cases, proved ample. In connexion with advanced cases which remained at home the contacts were sometimes received in the hospital for out-door treatment. The pale-faced children of consumptive parents were those selected for residence in the open-air ward. No patient was allowed to be idle. In Dr. Robertson's opinion, if phthisical patients are permitted to idle about they develop into perfect nuisances, and one grumbler will exert a most pernicious influence over his fellow patients. The men saw wood, do odds and ends at painting, assist the gardeners in digging and weeding. Each week one man is detailed to look after the meals. The women sew, weed the garden, keep the bungalow clean, and assist in the ward kitchen.

Some lantern slides were shown, among which was one depicting four disused tramway cars which were used as shelters in the grounds of the Leith hospital.

In the discussion which followed Dr. SIDNEY DAVIES said that notification of phthisis should be invited and not compelled. At Woolwich he had had double the number of cases notified since he had been able to offer sanatorium treatment. He emphasised the importance of providing work for patients after they had left the sanatorium.

Dr. J. E. SANDILANDS maintained that no municipal machinery for dealing with tuberculosis could be considered complete unless a tuberculosis dispensary were provided. The medical man who carried out the dispensary treatment should give his whole time to the work and should follow up the cases in the homes of the patients.

Dr. R. DUDFIELD considered that the real need for sanatorium treatment was not yet known and that dispensaries might make sanatoriums unnecessary.

Mr. E. H. T. NASH looked upon voluntary notification as a farce, and thought that from the point of view of the great cost involved sanatorium treatment was not justified. He advocated the establishment of dispensaries in which tuberculin treatment could be carried out.

Dr. WILLIAM BUTLER referred to the importance of increasing the resisting powers of the people by improved hygienic surroundings.

Dr. A. H. BYGOTT advocated greater coöperation between the Poor-law and public health services, and pointed out that boards of guardians never supervised the sanitary conditions of those to whom out-relief was given.

Dr. W. CAMAC WILKINSON considered that until tuberculin treatment was systematically used in dispensaries these institutions would not be so successful as they should be.

Dr. W. H. SYMONS urged the importance of securing the early treatment of patients.

Dr. A. MEARNS FRASER pointed out that as there seemed to be some doubt as to the power possessed by a municipality to spend money on a dispensary, any apparent illegality could be removed by putting a bed in the institution and calling it a hospital.

LIVERPOOL MEDICAL INSTITUTION.

Exhibition of Cases and Specimens.—Pathogeny of Eclampsia.

A PATHOLOGICAL meeting of this institution was held on Dec. 1st, Dr. T. R. BRADSHAW, the President, being in the chair.

Dr. EDGAR STEVENSON showed five cases of Melanotic Sarcoma of the Choroid which had occurred in his practice within 12 months. The eyes, beautifully mounted by Mr. Harcourt, demonstrated the various stages to the fourth stage, involving the orbital tissues.

Dr. K. A. GROSSMANN showed a Melanotic Sarcoma of the Ciliary Region; and Dr. C. LEE a similar tumour of the eye.

Mr. W. THELWALL THOMAS and Dr. R. S. TAYLOR showed: 1. The Right Lobe of the Thyroid Gland removed from a man, aged 37 years, with severe Graves's disease. The mass weighed 6 ounces and had the usual microscopical appearances. The symptoms greatly improved in three weeks. 2. An Adenoma of the Thyroid from a girl aged 17 years. Microscopically it was very cellular and resembled an immature or fœtal thyroid tissue.

Dr. A. STOOKES showed a Uterus with Adeno-carcinoma of the Body, Interstitial and Submucous Fibroid; also a Uterus with Adeno-carcinoma of the Body simulating a Fibroid.

Mr. ARTHUR EVANS and Dr. P. HICK showed an Epithelioma of the Arm, which had arisen after a slight injury in the substance of the triceps muscle apparently from an epithelial cell-rest or dermoid. Prickle cells were demonstrated in the growth. The arm was amputated; there were no growths elsewhere.

Dr. J. M. HUNT and Mr. R. E. KELLY showed a Tuberculous Larynx in an infant, aged 21 months, with tubercle in both lungs and cavities at both apices. The parents were healthy and the child was breast-fed.

Mr. KELLY showed a specimen illustrating the association of Appendicitis and Undescended Testis on the same side. It illustrated the difficulty in diagnosis between

torsion of the undescended testis and appendicitis. Microscopically the appendix somewhat resembled mucoid cancer.

Mr. R. CRAIG DUN and Dr. ERNEST GLYNN showed a Malignant Tumour of the Right Suprarenal Gland removed post mortem from a girl, aged 5 years. The child showed marked precocity of development, her appearance being that of a girl of 15 years. There was profuse growth of hair on the scalp, upper lip, and pubes.

Mr. K. W. MONSARRAT and Dr. GLYNN showed Metastases of Lympho-sarcoma in both Suprarenal Glands secondary to growth in the Mediastinum.

Dr. GLYNN showed lantern slides of two cases of Multiple Myeloma in which the growth was of the plasma-cell type.

Dr. N. P. MARSH, Dr. J. CUTHBERT MATTHEWS, and Dr. T. J. WILLIAMS showed Blood Films from two girls, aged 3 and 10 years respectively, who had died from acute lymphoid leukæmia of the small lymphoid-cell variety. There was general enlargement of the glands. They both died within eight weeks of the onset of symptoms.

Mr. G. P. NEWBOLT and Dr. D. MOORE ALEXANDER showed a Tumour of the Brain excised from the right Rolandic area with temporary improvement. Death took place from recurrence. Dr. Alexander thought the growth resembled a neurocytoma, as described by Homer Wright.—Dr. GLYNN regarded it as a glioma sarcomatosum.

Mr. NEWBOLT and Dr. ALEXANDER also showed sections of Acinar Carcinoma in a woman, aged 38 years, and of Fibro-cysto-adenoma of seven years' history; and a painting of Malignant Pustule successfully treated by excision, local injections of carbolic acid, and intravenous injections of Sclavo's serum.

The PRESIDENT showed a specimen of Cerebral Hæmorrhage associated with Granular Kidneys and Hypertrophied Heart in a girl, aged 20 years. She had suffered from headaches for a year. He also showed a specimen of Hæmorrhage into the left lateral lobe of the Cerebellum in which there were no paralysis, contracted pupils, and a temperature of 105° F. The pons was normal; there was no blood in the fourth ventricle. There had only been one case of cerebellar hæmorrhage in the records of 1800 necropsies at the Infirmary in 14 years.

Dr. H. LEITH MURRAY read a paper on Some Points in the Pathogeny of Eclampsia. As the result of microscopical examination he considered the toxin to be one containing hæmolytic (cytolytic), hæmagglutinative and endotheliolytic elements, and pointed out how a polymorphism of the lesion was produced by interaction of these. He admitted a difficulty in deciding to what extent the lesions in the central nervous system were due to direct intoxication (neurotoxin) or to vascular disturbances. Certain experimental and natural conditions were compared with eclampsia: (1) the lesions produced by the inoculation of certain immune sera; and (2) the lesions and effects on the circulation produced by snake poisoning. The extraordinary similarity in type of toxin between this latter and the eclamptic was detailed, and the variety of such toxin was emphasised. Evidence was adduced that this comparison was no mere artificial one in the results. Burgers had lately demonstrated the presence in maternal serum of a cobra-hæmolysin-inhibiting factor. Dr. Leith Murray had confirmed this in several cases, but had found it absent in a case of eclampsia. Further results were promised later. He suggested the experimental use of Calmette's antivenene in eclampsia, injecting it subcutaneously in the pre-eclamptic stage and intravenously in the eclamptic stage. The injections could do no harm—The PRESIDENT congratulated Dr. Leith Murray on his interesting and original paper. He thought that an appropriate serum might be found for puerperal eclampsia; but doubted whether antivenene was likely to be useful. The various venoms were much more closely related to each other than any of them were to the toxins causing eclampsia, and yet these antisera were practically useless against any but their own particular venom. The action of venom neurotoxin was always paralytic and that of eclampsia was for the most part convulsivant.—Dr. W. BLAIR BELL said that there was little doubt that whatever the primary cause of eclampsia was, the ultimate results in fatal cases were due to the establishment of a secondary vicious circle whereby the changes in the liver led to an intoxication of the patient by the products of its disintegration. He did not think it likely that antivenene would prove specific, but he was much impressed by Dr. Murray's interesting arguments in favour of the serum.—Dr. STOOKES, Dr. GEMMELL, and Dr. GLYNN also spoke.

Exhibition of Cases.—Liquid Air and Carbon Dioxide Snow in the Treatment of Skin Diseases.

A MEETING of this society was held on Dec. 8th, Dr. T. R. BRADSHAW, the President, being in the chair.

The PRESIDENT showed two patients the subjects of Congenital Heart Disease: 1. A woman, aged 38 years, married 15 years and with three healthy children. Cyanosis had been present since infancy. There were also clubbing of the fingers, polycythæmia, and a systolic murmur over the ventricles. The heart was not much enlarged and the patient enjoyed fairly good health. 2. A youth, aged 17 years. There was no cyanosis, but dyspnœa on exertion. The heart was much enlarged and a rough systolic murmur and thrill were heard over the pulmonary area.

Dr. NATHAN RAW showed: (1) A case of Graves's Disease much benefited by rodagen treatment; (2) a patient with Diabetes Mellitus, Tabes, and Double Perforating Ulcers; and (3) a patient with Traumatic Hemiplegia and Aphasia, with total destruction of the left motor area and Broca's convolution.

Dr. A. GORDON GULLAN showed a child, aged 3 years, suffering from Various Hæmorrhages from the Mucous Membranes and Kidneys. The child had been fed upon tea, bread and butter. Dr. Gullan considered the case to be one of scurvy rickets.

Dr. G. G. STOPFORD TAYLOR and Dr. R. W. MACKENNA, amongst other cases, showed a patient with Bronzed Diabetes, and a case of Primary Chancre with Secondary Eruptions. Within a week after one injection with "606" these signs had disappeared

Dr. STOPFORD TAYLOR and Dr. MACKENNA communicated a paper on Liquid Air and Carbon Dioxide Snow in the Treatment of Skin Diseases. They had used these agents with much advantage for over three years. Liquid air was approximately two and a-half times colder than carbon dioxide snow. It was easily applied on a piece of cotton wool twisted round a cane, and the application should be of a shorter duration than the snow. The drawbacks to its use were its cost and the fact that it evaporated very quickly. The snow, on the other hand, was easily procurable and cheap, and the pencils of the snow were easily prepared and applied. They had designed a series of moulds at a trifling cost. The application of either the air or the snow was not very painful except near some superficial nerve, or over a bone, carious teeth, or on the ears. The therapeutic use depended upon the reaction, which varied according to the nature of the tissue, the duration of the application, and the pressure applied. The reaction consisted in the copious outporing of serum with the formation of a bulla; there was marked diapedesis of leucocytes, the connective tissue becoming swollen and enlarged; many of the capillaries became thrombosed, but the epithelium sustained the chief damage in that in most cases it was completely destroyed. The after-treatment was simple. The bulla might be left unbroken for a few days and then clipped off and the resulting raw surface dressed with some simple dressing. Healing was somewhat slow but restitution was complete and sometimes surprising. Dr. Taylor and Dr. MacKenna gave their experience in the treatment of nævi, moles, X ray warts, lupus erythematosus, rosacea, and lupus vulgaris. Their best results in lupus vulgaris were obtained by linear scarification followed in a day or two by refrigeration with snow. Refrigeration should not be used in old people or in those suffering from broken-down constitutions or from arterio-sclerosis or nephritis. The paper was illustrated by lantern slides and the exhibition of patients and a practical demonstration of the methods of application.—Dr. W. C. Oram mentioned a case of Nævus of the Upper Lip in a child, aged 3 months, which had been much improved by the application of the snow; the child did not seem to suffer much discomfort.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Dec. 2nd, Dr. Phineas S. Abraham, the President, being in the chair.—Mr. J. E. R. McDonagh read a paper on Practical Experience with Ehrlich's New Specific for Syphilis. He commenced by

stating how Ehrlich came to discover "606," and then went on to say that as atoxyl and arsacetin produced amaurosis, it was feared that "606" might do the same, but since more than 20,000 injections had been given without this occurring, and since the drug seldom gave rise to toxic symptoms, its general employment had been considered absolutely safe. Although the intramuscular route was at first very largely employed, there was absolutely no doubt that the intravenous method was preferable. The patient suffered only a slight inconvenience in the form of a rigor or two and vomiting a few hours after the injection, compared with the severe pain which the intramuscular injection gave rise to. Of still greater importance was the fact that the organisms were killed at once, whilst with an intramuscular injection the absorption was slow and some of the arsenic might become completely encapsuled, thereby increasing the risk of a second injection, should it be necessary, owing to the fact that the encapsuled arsenic might at any time become liberated and with the arsenic given at the second injection amount to a toxic dose. The best method of procedure was to give an intravenous injection, and if the symptoms did not show marked improvement by the end of the third day an intramuscular injection should then be given. If the lesions improved, one should wait for about four weeks to be guided by a Wassermann's reaction as to whether a second injection (intramuscular) was necessary or not. Cases were described of sleeping sickness, tuberculous forms of leprosy and leukæmia, psoriasis, and lichen planus in which "606" had exerted some beneficial action. Other infections superadded on syphilis, such as tubercle, streptococci, and staphylococci, were often markedly improved by "606." A case was shown in which extensive phagedæna had been checked by one injection. Several cases were shown illustrating the cure produced in all the stages of syphilis. A case of lichen syphiliticus, the most resistant form to mercury, was cured by one injection of "606" without any scars resulting. Malignant cases of syphilis associated with tuberculosis were improved beyond recognition. The most striking cases were those who had suffered nerve paralysis from syphilitic meningitis. Almost complete power in the muscles supplied by these nerves had been regained. One case of tabes was cited, in which both the Argyll Robertson pupil had disappeared and the knee-jerks returned, and also morning erections which the patient had not had for four years. Seventeen cases of tabes had been injected, but only three improved insomuch as the lighting pains had disappeared. Cases of general paralysis of the insane before degeneration had commenced improved considerably. Chronic superficial glossitis, which hardly ever responded to mercury, was greatly benefited by "606." In all, Mr. McDonagh had treated 130 cases, three of which had recurred, two of these being cured by a second injection, and five only did not respond to "606."—Dr. Abraham regarded this method as the most important advance in the treatment of syphilis. He called attention to the smallness of the scars as compared with those following the ordinary methods of treatment.—Mr. Arthur Shillitoe drew attention to the difficulty in diagnosing syphilis by the Wassermann reaction owing to varying results given when different techniques were employed.—Captain L. W. Harrison, R.A.M.C., said that "606" had been used at the Rochester Row Military Hospital for some months, and was given by intravenous injection, using an ordinary transfusion apparatus with a short pointed needle. A second injection was given when the clinical signs did not disappear sufficiently rapidly or when the Wassermann reaction remained positive after three or four weeks.—Mr. H. W. Bayly said the permanency of cure by "606" had yet to be established and the evidence of the Wassermann reaction was very conflicting.—Mr. R. B. Etherington-Smith said that Mr. McDonagh had given injections of "606" to several cases of his and the immediate results had been wonderful, notably so in one of gummatous meningitis of ten years' standing.—Mr. Aslett Baldwin and Dr. T. Grainger Stewart also discussed the treatment.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Dec. 1st, Dr. F. Hinds, the President, being in the chair.—The following resolution was carried unanimously:—

That this society earnestly requests the town councils of Brighton and Hove to pass and enforce a by-law against spitting on the pavement, and to take steps to lessen the great and insanitary nuisance caused by dogs on the public footpaths.

—Dr. E. Weatherhead showed a case of Ossifying Enchondroma growing from the second cervical vertebra in a woman aged 49 years. It was first noticed when the patient was 9 years old, and had reached its present size at about the age of 25 years, since when it had ceased to grow. There was a very large, painless tumour at the back of the neck which caused but little inconvenience beyond slightly restricting movement of the neck. An X ray photograph, taken by Dr. C. F. Bailey, showed well the structure of the growth.—Dr. H. Galt showed a photograph, taken a week before death, and a section of one of the glandular masses in the neck, from a case of Hodgkin's Disease in a boy aged 10 years. The section showed characteristic appearances—viz., almost complete destruction of the normal lymphoid tissue, and its replacement by an endothelial proliferation within a fine reticular stroma. Several large "lymphadenoma cells" were also seen. The capsule of the gland was intact. Dr. Galt in addition showed a small Ovarian Dermoid Cyst removed by Mr. H. Nethersole Fletcher from a woman aged 24 years. It contained five teeth, numerous hairs, and the usual buttery material. The surface was lined with squamous epithelium, and beneath this were numerous sebaceous glands and hair follicles, but no ovarian tissue.—Dr. E. R. Hunt read notes of a case of Recurrent Carcinoma of the Parotid Gland treated with Coley's fluid. The patient was a man, aged 54 years, who had a large malignant growth on the right side of the neck, apparently originating from the parotid gland. Twenty-five years ago he had been operated on for a growth in the neck, which had recurred 12 years later. It had slowly become larger and more painful, and was now quite inoperable. Injections of Coley's fluid were given, and as the result of these the greater portion of the growth had sloughed and the pain and pressure symptoms were relieved. The patient had a peaceful end.—Dr. A. W. Williams read notes of a case of Gonorrhœal Keratosic Cones of the Feet and Hands. He said it was a very rare condition and only occurred in cases in which there was other evidence of gonococcal septicæmia, such as arthritis or tendo-vaginitis. It showed itself in two forms, both of which were present in this case: (1) diffuse thickening of the horny layer of the foot, and (2) the development of transparent horny cones and domes, mostly on the hands and feet, but sometimes in other places. Most of the cases are recorded in continental literature, probably because foreign dermatologists often include gonorrhœa in their specialty. The history of the present case was as follows. He was an in-patient at the Sussex County Hospital under the care of Dr. E. Hobhouse, suffering from gonorrhœal arthritis. Whilst undergoing treatment he developed the peculiar condition of the skin referred to. No gonococci were found in cultures from the greyish putty-like material found under some of the horny masses.

SHEFFIELD MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Nov. 24th, Dr. Samson Mathews, Vice-President, being in the chair.—Dr. A. E. Naish, in a paper on the First Month of Infancy, pointed out that it was common knowledge that infants were weaned unnecessarily, but owing to a lack of an intimate knowledge of the causes which led to it the custom was still prevalent. Depressed and fissured nipples or chronic mastitis were not necessarily a contra-indication to breast-feeding. In the infant, crying, vomiting, and wasting were the usual reasons given for weaning. He showed that any of these symptoms might be fallacious, and that it was especially important in a wasting child to ascertain whether this condition was due to a defect of the milk or not. In the latter case the wasting was usually aggravated. He showed that the influence of the nurse was often against the continuance of breast-feeding and that many arguments she used were fallacious. In referring to cases of so-called congenital atelectasis, he brought forward examples where the infants were at first strong and healthy and in whom the onset of the symptoms dated from the fifth or sixth week. Such cases seemed to have a familial incidence. He thought that in these cases the collapsed lung was probably not present from birth and that possibly the disease might be a disorder of the normal respiratory reflex.—Mr. Graham S. Simpson showed specimens and read notes of three cases of Nephrectomy. 1. Suppurating Hydronephrosis from a woman aged 55 years. Pus could be seen coming from the right ureter. Skiagraphy showed two shadows in the right kidney region; a diagnosis of calculous pyonephrosis was made. No stones, however, were found on excision. 2. A small Fatty

Kidney, containing a calculus, from a boy aged 16 years. He was admitted to hospital for flexion of the left hip and spine, but no psoas abscess could be felt. After he had been in a fortnight a large psoas abscess developed which was opened and drained. Two months later, as the patient did not improve, he was persuaded to have another operation when this kidney was found and removed. 3. A Tuberculous Kidney removed from a man aged 22 years. He complained of great frequency in micturition and pain in the right loin. There was intermittent pyuria but no tubercle bacilli were found in the urine. Skiagraphy showed a shadow just below an enlarged right kidney. Chromo-cystoscopy was difficult as the bladder bled easily, but the right ureter was watched for two minutes and no urine was seen to come out. The kidney was excised as it felt like a bag of pus. It contained numerous tuberculous abscesses but also a fair amount of kidney substance. The patient's output of urea was very small for the first few days; it then increased till about the eighth day, after which it rapidly fell. He died from uræmia a fortnight after the operation.—Dr. Stanley Riseley showed: 1. A man with a Corneal Ulcer due to an injury by a chipping of brass. 2. A girl with Marginal Blepharitis of old standing. All the lashes were now lost and there were opacities on both corneæ. 3. A case of Subacute Glaucoma with a chronic conjunctival discharge making it dangerous to operate. 4. A case of Trichiasis for which Arlt's operation had been done on both eyes.

Reviews and Notices of Books.

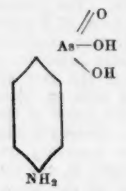
Die Experimentelle Chemotherapie der Spirillosen (Syphilis, Rückfallfieber, Hühnerspirillose, Frambösie). (Experiments in the Chemical Treatment of Spirillum Infections (Syphilis, Relapsing Fever, Fowl Spirillosis, Yaws)). By PAUL EHRLICH and S. HATA. Five plates. Berlin: Springer. 1910. Pp. viii.—164. Price 6 marks (6*s.*), paper; 7 marks (7*s.*), bound.

THIS little book, which is shortly to be published in English, gives a most instructive account of the researches which led to the announcement of "Ehrlich-Hata 606." In the first part Hata describes his investigations planned to determine the best therapeutic agent for destroying spirilla parasitic in the blood. They could only be attacked, as Ehrlich had shown, through their chemoceptors. Of these they have many, but in the present study only those receptors or chemoceptors came to be considered which manifested a great affinity for, a greater disposition to combine with, the radicals of the chemical substances (drugs) used than did the receptors of the tissues of the host. In other words, Hata was seeking for the treatment of these infections a drug which should attack the spirilla more energetically than it attacked the patient, should poison them rather than their victim. Accordingly, he endeavours for each animal, for each parasite, for each drug, to determine the ratio:—

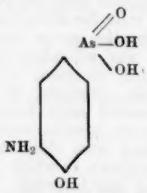
$$\frac{C}{T} = \frac{\text{curative dose}}{\text{tolerated dose}} = \frac{\text{dose sufficient to destroy all parasites.}}{\text{maximum dose which will not kill patient.}}$$

If a drug is to be of use in clinical medicine this ratio should be one-third or less, and this condition, it is claimed, has been thoroughly fulfilled by the dioxydiamidoarsenobenzol "606." Very oxidisable this is, Hata says, and therefore it is only sent out in exhausted glass tubes. Itself insoluble in water, its hydrochlorate does dissolve, giving a very acid solution, too acid to be injected. If to this normal caustic soda solution be added a precipitate will be thrown down, which may be separated by the centrifuge, and then, while still moist, it can be dissolved in a very little of the alkaline solution and is now fit to be injected.

In the second part of the book Ehrlich tells how he came to devise "606," why it has its power, and what he hopes it will achieve. Laveran had stated in 1903 that arsenious acid had an action upon trypanosomes, and in the same year Ehrlich and Shiga examined atoxyl, but set it aside as they found it had no action on trypanosomes *in vitro*. In 1905 Thomas and Breinl of the Liverpool School of Tropical Medicine reported that atoxyl had good therapeutic effect on trypanosome-infected animals. So Ehrlich took atoxyl up again, and with Bertheim found its chemical constitution had been misunderstood, and that it really was a paramidophenylarsenate:—



From this by oxidation, first with nitrous, then with nitric, acids, and by subsequent reduction, they obtained metamidoparaoxyphenylarsenate:—



As the arsenic here is five-valent the substance is not very poisonous. On the other hand, the large dose required to free mice from trypanosomes may suffice to cause destruction of the auditory and visual nuclei, so that the mice suffer from tremors and are named "dancing mice." Further reduction still, produces a molecule with trivalent arsenic uncombined with oxygen, more poisonous to spirilla, less hurtful to higher animals, and chemically more stable. This is the diamidodioxyarsenobenzol. The first of these arsenical preparations of Ehrlich to be used extensively was arsenophenylglycin in sleeping sickness. It is dangerous, but so is the disease. It should be given in one or two large doses, the highest the body can stand, so that it produces the maximum effect on the parasites before it has had time to damage the tissues of their host. A similar aim is before us in giving "606," which was introduced in June, 1909, as a remedy for relapsing fever; its effect on syphilis has only become known since. All arsenic preparations are toxic, but Ehrlich holds that in "606" this toxicity is held in check by the amido and hydroxyl groups in the molecule, and that this drug is as safe as mercury, and safer than grey oil. Its administration may cause severe pain (one man has died from shock), and it should not be given where a rise of blood pressure may do harm—e.g., in aneurysm and heart affections, nor in paralyses and optic atrophy; it clears up optic neuritis and renal affections of specific origin. It has been used in 10,000 cases without, it is said, any serious consequent complications, and the dose may go to 22 grains without danger. It produces, Ehrlich says, antibodies in the milk and serum of patients; it excites rapid absorption of syphilitic exudations and stimulates the growth of epithelium; and he recommends it for use specially in cases of malignant and ulcerating syphilis, in psoriasis palmaris, and in cases that cannot take mercury, or take it with little or no benefit. It produces its effect most rapidly when administered intravenously; this should be followed by a subcutaneous or intramuscular injection two days later. As it very rapidly heals mucous patches and ulcerations of the mouth, it will materially diminish in future the spread of the disease.

We do not give more space to this very original book, the English translation of which will be widely read, because our

columns have reported in full so many actual experiences of the treatment. The authors also report successful employment of "606" in relapsing fever in Cairo and yaws in New York.

Ehrlich has never asserted that the results of treatment by "606" were permanent, whatever may have been hoped, and since this book was published articles have appeared in Germany urging that ordinary cases of syphilis should be submitted to the usual mercurial routine with doses of "606" two or three times to accelerate the effects of treatment. From neither one nor the other, nor from both, can we at present promise a permanent cure. Yet Ehrlich and Hata deserve our gratitude, they have so enormously increased our power of dealing with this intractable disease.

Aspects of Death and their Effects on the Living, as Illustrated by Minor Works of Art, especially Medals, Engraved Gems, Jewels, &c. By F. PARKES WEBER, M.A., M.D. Cantab. London: T. Fisher Unwin. 1910. Pp. 160.

THE contemplation of death as a condition, state, or event, which will indubitably happen to everyone, has from the earliest times been a factor in human life. Not merely the fact, but the knowledge that death must come, has affected conduct, literature, and art more widely, perhaps, than anything else. Both those who believed in a future life and those who considered death as the end of all things have ruled their own lives, and those of their opponents when they were in a position to do so, from a consideration of death, for the appalling cruelties committed in the name of religion, when reduced to their common denominator, practically depend upon the fact that it was necessary to behave in a particular manner during this life, than which there was no other, or so to live here with a view to the conditions after death. The literature about or in connexion with death is endless. We need only here refer to two instances where both writers were medical men—namely, Henry Vaughan, in his poem "Friends Departed"; and Sir Thomas Browne, in his magnificent prose poem, entitled "Hydriotaphia." Another medical man, Dr. F. Parkes Weber, has now taken up the subject from a different point of view—namely, the consideration of death as exhibited in minor works of art.

Dr. Weber is known as an accomplished numismatist, and within quite a short space of time as the donor of a fine collection of medals to the British Museum; he is therefore able to treat his subject with the knowledge of an expert. The first part of the work is a general introduction to the whole matter; the second is an analysis of the various aspects of death, with the mental attitudes towards death, in order to show the headings under which the illustrative works of art may be grouped; the third part is devoted to the consideration of the medals and coins; and the fourth to gems and jewels. Dr. Weber has collected a wonderful amount of information, and the value of his book is much increased by the illustrations which he gives of coins, medals, gems, and pictures dealing with the matter in hand. On p. 14 he refers to the story of the "trois morts et les trois vifs." We might add to his examples the picture by Rossetti, entitled "How they Met Themselves," which has obviously the same meaning, although "themselves" are not represented as dead. On p. 41 he gives the inscription, "Mors sceptra ligonibus æquat," and its well known English equivalent by Shirley. Dr. Weber remarks that the quotation is ascribed to Lucan. We have been unable to trace it in the Pharsalia, the only poem of Lucan which has come down to us, but as the sentence occurred in a fourteenth-century wall painting it may have been quoted from Lucan's other poem on the burning of Rome, which is now lost. Claudian, however, in his "De Raptu Proserpinae," Book II., line 302, says, "Omnia mors aequat," which expresses a similar feeling, and we may also refer to the inscription on the tomb of Fair Rosamund:—

> "Hic jacet in tumulo Rosa mundi non Rosa munda:
> Non redolet sed olet quae redolere solet."

Sepulchral monuments designed to show the contrast between the dead and the living were common in the Middle Ages, and Dr. Weber gives an illustration of the well-known monument of Archbishop Chichele in Canterbury Cathedral. It is interesting to remember that something of the same idea is expressed in the only monument from old St. Paul's which survived the fire—we mean that of Dr. Donne, who is represented in his shroud. It is placed in the south choir aisle.

We are grateful to Dr. Weber for a painstaking and interesting piece of work, both from the literary and artistic point of view.

The Nutrition of the Infant. By RALPH VINCENT, M.D. Durh., M.R.C.P. Lond., Senior Physician to the Infants' Hospital, Westminster. Third edition. London: Baillière, Tindall, and Cox. 1910. Pp. 342. Price 10*s.* 6*d.* net.

OF all the numerous substitutes for the natural breast-feeding of infants, percentage or laboratory feeding is the one which is capable of the most careful and scientific adaptation to the needs of the infant. Its elaboration in America by Dr. T. M. Rotch was undoubtedly a notable contribution to the important subject of infant feeding. In this country, in spite of the ardent championship of Dr. Ralph Vincent, it has only been employed to a comparatively limited extent. In this book, which has now reached its third edition, Dr. Vincent gives a very interesting and lucid account of this method and of the principles upon which it is based.

He first discusses at considerable length the composition of human milk, giving the results of numerous analyses by different authorities, thus affording an approximate standard for comparisons. The management of the lactating woman is then considered, and general rules are given in regard to diet, exercise, and other conditions influencing the function of lactation. Cases are described illustrating the care and management of conditions of disordered lactation. The chemical composition of cow's milk is then studied and the differences between human and cow's milk are considered. The function of the extractives present in milk and the influence they exert upon nutrition are discussed.

In regard to substitutes for breast feeding, Dr. Vincen uses the term "substitute feeding" for wet-nursing and for modified cow's milk, restricting the term "artificial feeding" to those methods where food mixtures are made with products artificially prepared by manufacturers. He describes the methods of preparing percentage milks adapted to different ages and to different conditions. This method of feeding he describes as "combining clinical elasticity with scientific precision." While admitting its value, we must confess that the objections of its complexity and cost, which Dr. Vincent does not attempt to deny, seriously militate against its general adoption at present. The general question of the milk-supply is considered in a separate chapter, and an earnest plea is registered for milk commissions to ensure a pure milk-supply on the lines of those already in action in some American towns. A chapter is also devoted to the heating of milk and the changes induced by it. Boiling and sterilisation are strongly condemned, and Dr. Vincent states that he now uses unheated milk mixtures, simply warming to blood heat immediately before administration. He therefore emphasises the importance of securing good pure fresh milk. Other matters discussed are the chemistry of infantile digestion, the diet of the infant in relation to growth, and the effects of variations in the individual constituents of the diet. A

general consideration of the normal development of the infant, including its weight, muscular and nervous functions, the special senses, and dentition, is also given.

The remainder of the book is devoted to a study of the effects of errors of diet upon the digestion and nutrition of the infant. The various gastric and intestinal disorders are described and the appropriate treatment is set forth. Zymotic enteritis or infantile diarrhœa is dealt with at some length. Dr. Vincent maintains that an essential factor in the development of the disease is that the characteristic properties of the milk should have been destroyed by heat, by preservatives, or by some other means. Descriptions of infantile atrophy, of rickets, and of scurvy are given, and the prevention and treatment of these conditions are discussed.

Dr. Vincent's book is a thoughtful and practical work on the subject with which it deals. It abounds in useful information, and is obviously the outcome of special experience. Although some of his views will not find general acceptance, they demand consideration, since they are based upon a practical study of the principles involved. The book is written in an easy and readable manner.

LIBRARY TABLE.

Transactions of the American Dermatological Association at its Thirty-third Annual Meeting held in Philadelphia, June, 1909. Official report of the Proceedings, by GROVER W. WENDE, M.D., secretary. Pp. 289.—Much valuable work has been accomplished by American dermatologists, and some of the most interesting discoveries are usually reserved for the annual meeting of the Dermatological Association. This report of the proceedings of last year's meeting, which has just come to hand, contains so much that is new and important that it is difficult to pick out what is the most valuable content of this interesting volume. Three papers connected with psoriasis deserve mention. Dr. S. Pollitser has written on the etiology of the disease, Dr. J. F. Schamberg on the parasitism of psoriasis, and Dr. W. F. Breakey on some unusual cases of psoriasis. We agree with Dr. Pollitser's conclusions that psoriasis is most probably due to an external microbial infective agent. Dr. J. A. Fordyce's study on the lichen group of skin diseases will well repay perusal, and the admirable photoprints accompanying it can but enhance its value. Dr. H. H. Whitehouse has applied the Wassermann test in some cases of scleroderma, and he is inclined to suggest, from the fact that in the six cases in which the test was applied three gave a positive action, that syphilis may be found to be an etiological factor in the production of scleroderma. A very interesting paper is that written by Dr. Douglas W. Montgomery and Dr. Howard Morrow on the increase of certain contagions following the great fire in San Francisco. The chief contagious skin lesions were impetiginous in nature.

War, Police, and Watch Dogs. By Major E. H. RICHARDSON, late 45th Regiment (Sherwood Foresters), Fellow of the Zoological Society. Edinburgh and London: William Blackwood and Sons. 1910. Pp. 132. Price 5*s.* 3*d.* post free.—This book is an endeavour to bring before the public the value of certain services which the dog is fitted to perform for man. These include the tracking and arrest of criminals, a service in which dogs are now regularly used in Germany, the searching out of wounded soldiers on the field of battle, the carrying of messages and despatches, and the use of dogs as sentries and scouts. A chapter is devoted to the watch-dog in the house, and some useful information is given concerning the best methods of utilising a dog for this purpose. The foot of the staircase in the hall, as being probably the centre of the house, is recommended as the best position for the dog at night, where he should be chained up beside a comfortable bed placed there for him. The use of dogs in war for searching out the wounded seems justified by the results which followed the use of some of Major Richardson's dogs in the Russo-Japanese war. On this point Captain Persidsky writes as follows: "In finding the missing and wounded, with which the millet-fields are strewn, nothing has succeeded like our pack of seven dogs. The English ones are especially intelligent. In our last engagement 23 men were found in unsuspected places." Major Richardson recommends the collie and retriever as the breeds of dogs best suited to ambulance work in temperate climates. He is making a trial of bloodhounds for hot countries. Directions are given as to the training and equipment of dogs for ambulance work. The book concludes with a chapter on scent, in which is contained an account of some experiments performed by the author and others in an attempt to elucidate the nature of this faculty. Certain general conclusions are reached in regard to the best condition of soil and atmosphere for the preservation of scent, but it has not been possible to draw any particular conclusions or to dogmatise, and the subject remains much in the condition in which it was. The book contains much useful information of the practical sort.

The Building and Care of the Body. By COLUMBUS N. MILLARD. New York: The Macmillan Company. 1910. Pp. 235. Price 2*s.* 6*d.*—This is a fair example of the innumerable little works upon hygiene, both personal and general, which have of late years been conspicuous features of the semi-medical press. It is apparently written for both teachers and children, and not, we gather, for those of even a modest degree of education, for many words are given phonetically, as well as spelt in the ordinary way—thus, contraction (kŏn-trăk'shŭn). The book commences with simple lessons in physiology, and then goes on to treat of food, air, and the effects of pure and foul air on the health. Then follows a section on personal hygiene, common accidents, and contagious diseases. There is a glossary at the end. We cannot conscientiously say that the book is of much value.

JOURNALS AND MAGAZINES.

Journal of Pathology and Bacteriology. (Official Organ of the Pathological Society of Great Britain and Ireland.) Vol. XV., No. 1, containing 19 plates, one of them coloured. Published from the Department of Pathology, Cambridge University. Pp. 136. Price 7*s.* 6*d.* net.—In the current number of this journal M. A. Ruffer and A. R. Ferguson (Cairo), in a Note on an Eruption resembling that of Variola in the Skin of a Mummy of the Twentieth Dynasty (1200–1100 B.C.), describe and illustrate the results of a histological examination of an Egyptian mummy which showed a bullous eruption within the epidermis, as in small-pox, with many bacteria in the dermis. It is very interesting to note the extraordinary "keeping" powers of these bacteria, and even the tissues in which they are embedded. In Observations on the Changes produced in the Blood and Bone-marrow by Hæmorrhage and Blood Destruction, C. Price Jones (London) gives a description and classification of the marrow cells of the rabbit, tracing both the erythroblastic and leucoblastic series to a primitive lymphoid cell which, along with Buchanan, he derives by budding from the giant cells. By emulsifying the fresh marrow in 10 per cent. neutral glycerine films may be made; these are stained by Jenner's stain, and show many details which cannot be seen by section methods. The proportions of the different kinds of cells may be determined by counting these films. The marrow of rabbits, bled and killed after various intervals and examined, shows that this method brings

out well the erythroblastic reaction, and that when the nucleated red cells in the marrow are increased there is also an increase in the lymphoid cells from which they are derived. J. S. Dunn (Glasgow), in a paper on the Oxydase Reaction in Myeloid Tissues, demonstrates that the synthesis of indophenol from alpha-naphthol and dimethyl-paraphenylendiamin is produced by neutrophile and eosinophile leucocytes, and less rapidly by large hyaline leucocytes and by myelocytes in marrow and leukæmic blood. Mast-cells produce this less readily, as do some myeloblasts (non-granular myelocytes). The reaction is not given by lymphocytes or red blood cells, nor by normal tissue elements except the epithelium of the parotid and lacrymal glands. The oxydase in myeloid cells is not destroyed by the paraffin process; sections are best preserved in water-glass. It is soon destroyed by hydrochloric and oxalic acids, sublimate, picric acid, and phenol, but not by formalin, hydrocyanic acid, osmic acid, or resorcin. The reaction is of great assistance in determining the distribution of myeloid tissue. W. M. Scott (Edinburgh) gives an admirable summary of the present knowledge of a difficult subject in his paper, Anaphylaxis in the Rabbit; the Mechanism of the Symptoms. Rabbits may be sensitised to foreign serum or blood corpuscles, milk, bacteria, or vegetable proteins. The dose required is much larger than where guinea-pigs are used; the sensitive state develops after ten days, lasts another ten days, and then rapidly declines. If the animal survives an anaphylactic shock it is refractory for about four days and fully sensitive again on the seventh day. Passive transference of the sensitive condition is best effected if the serum from a sensitised animal and the foreign protein are injected into a fresh animal simultaneously. There is a great variation in the degree to which individual rabbits can be sensitised; this varies with the amount of precipitin developed in their serum. The prostration and muscular paresis of the anaphylactic shock are due to a great fall of blood pressure; the portal area is intensely congested; and there is paralysis of the capillaries as well as the arterioles. The arrest of respiration is due to commencing œdema of the lungs. In the blood there are delayed coagulation and imperfect fibrin formation, a marked leucopenia; precipitin disappears completely from the serum and complement is much diminished; bacteriolytic and opsonic powers are decreased. There is some evidence of injury to the endothelium of the blood-vessels. The author attributes the anaphylactic illness to the interaction of precipitin and antigen; there is no precipitin for several days after recovery, and when it reappears the animal again becomes sensitive. The rectal temperature falls during the illness, and the gaseous exchange is diminished by about 25 per cent. Under the title Syphilis of the Lungs, with the Report of a Case, A. R. Robertson (Harvard) describes a case showing multiple gummata in the middle and lower lobes of both lungs with syphilitic aortitis and an aneurysm of the aorta. No spirochætæ could be found in either aorta or lung. J. Lorrain Smith (Manchester) continues to report observations on the Staining of Fat by Nile-blue Sulphate. Criticising Pappenheim and others who have supposed that the red colour in which Nile-blue stains neutral fat is due to metachromatism, he points out that this is incorrect. Watery solutions of Nile-blue sulphate stain fat or fatty acids red because they contain the oxazone which has arisen by oxidation of the oxazine base; they stain fatty acids blue because the colour base (oxazine) unites with the fatty acid to form a blue soap-like compound. He thinks that confusion has arisen because the oxazone and the oxazine base are both red substances and that both stain fat red because they are more soluble in fat than in the dye solution. C. McNeil (Edinburgh), in an interesting paper, discusses the Resistance of Human Red Blood Corpuscles in Health and Disease to Hæmolysis by Saponin; with a Comparison of Saponin and Hypotonic Salt Solution Hæmolysis. He investigated the hæmolytic effect of saponin on washed red cells suspended in 0·85 per cent. salt solution at 37° C.; the degree of hæmolysis was measured by using a uniform dose of red cells (50,000,000) and counting the number left undissolved at the end of the experiment. He finds that the resistance is diminished in jaundice, anæmia, and high fever; in diabetes it is increased. The resistance to hypotonic salt solution is increased in jaundice and diminished in anæmia. Experiments *in vitro* show that red cells kept for some time in a slightly hypertonic salt solution develop a much increased resistance to hæmolysis by hypotonic solutions (0·42 per cent. NaCl), their resistance to saponin remaining unchanged. The high resistance to hypotonic hæmolysis in jaundice is due to the plasma being somewhat hypertonic; the low resistance to saponin hæmolysis to the bile salts having combined with some of the lipoids of the red cell envelope. W. B. M. Martin (Glasgow) contributes an article on the Gonococcus and its Differentiation from Allied Organisms. He contends that the reaction of the medium is most important when the gonococcus has to be cultivated. To a beef broth are added 0·5 per cent. disodium phosphate ($NaHPO$), 1 per cent. peptone, and 2 per cent. agar; the reaction is adjusted to 0·6 per cent. acid to phenolphthalein (titrated hot). On to the surface of a sloped tube are run three or four drops of sterile human serum which has been heated to 57° C. for one and a half hours. On this medium gonococci grow readily. They are easily killed by cold, and it is therefore of great importance to make the cultures direct from the living bodies and to transfer to the incubator as soon as possible. Descriptions are given of the cultural appearances of gonococcus, meningococcus, and M. catarrhalis. The author finds that the ferment actions on dextrose, lævulose, maltose, and cane sugar afford important and useful differential tests. Complement deviation and bactericidal action with immune animal sera are also of service in diagnosis. The three organisms are undoubtedly distinct, though doubtful strains are sometimes met with. Abstracts of an interesting series of papers contributed as the Proceedings of the Pathological Society of Great Britain and Ireland complete a valuable number.

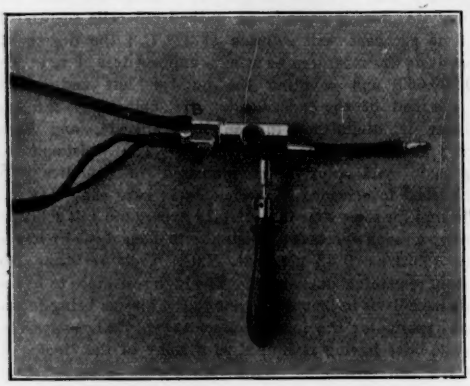
New Inventions.

NEW MEDICATED VAPOUR APPARATUS.

A NEW hot-air and hot medicated vapour apparatus has been made for me by the Sanitas Electrical Company, Limited, of New Cavendish-street, London, W., which I have found extremely useful in the treatment of chronic suppuration in the middle ear, in the antrum of Highmore, and in the frontal sinus. As will be seen from the accompanying illustration, it consists of a small cylinder A, 1¾ inches long and 1 inch diameter, fixed on a handle. On one side of this is a small mica window, through which the amount of heat produced in the coils of wire contained in the cylinder can be determined by watching the glow produced, from dull to bright red. At B is the inlet tube through which either air or medicated vapour is passed, and at C is the outlet tube. At D are the terminals connected with the wire coils, which can be attached either to a Multostat or to any accumulator working a cautery.

The following are the advantages possessed by this little instrument: It is extremely light—4 ounces with cords attached. It can be used either for hot air or for hot

medicated vapours—e.g., formalin, creasote, carbolic acid, &c. The heat is under perfect control, as is also the amount of air or vapour given. The hot air or medicated vapour can be given equally well through the external auditory meatus,



the Eustachian catheter, the frontal sinus catheter, or through a Lichtwitz's cannula into the antrum of Highmore. The price of the instrument is £2 10s.

J. GAY FRENCH, M.S. Lond., F.R.C.S. Eng.

Harley-street, W.

THE LONDON COUNTY COUNCIL AND MEDICAL AFFAIRS.

AT the meeting of the Education Committee of the London County Council on Dec. 14th the receipt of two letters from the Board of Education was reported—one with reference to the Council's reply to the Board's criticisms of the arrangements for medical inspection in the metropolis,[1] and the other on the proposals for making a first experiment in dental treatment at the Deptford Children's Centre and the Poplar Hospital for Accidents.

The Reorganised Scheme of Medical Inspection.

With regard to the Council's reorganised scheme of medical inspection, the Board remarked that the question whether the arrangements were adequate and satisfactory was one which could not be considered merely in relation to the number of officers employed and the number of inspections which each officer might be able to carry out, and the Board was not yet in a position to express any considered opinion on the question. The Board reminded the Council that its investigations had disclosed a great lack of that organisation, direction, and control of the medical staff which was essential in dealing with the enormous area and numbers involved in the case of London schools, and particularly when the work was attempted by means of part-time school medical officers. The Board could not find in the Council's reply to its previous criticisms any clear indication of the means by which the Council was remedying, or was proposing to remedy, these defects The effectiveness of the increased staff described must depend upon the instructions under which the scheme was worked henceforward and the manner in which those instructions were observed in practice. The Board presumed, though this was not stated, that detailed instructions had been given already by the principal school medical officer to secure that the work of inspection was being regularly and continuously carried out on a definite system designed to cover the ground effectively, and that such a system was in actual operation all over London. The Board could only express the hope that when the working of the new arrangements came to be examined it would be found that the urgent needs of the metropolis in respect of medical inspection had been adequately provided for at last.

The Experiments in Dental Treatment.

With regard to the proposals for dental treatment, the Board wrote that, while it recognised it was essential to proceed tentatively in attacking the problems with which the Council was confronted in the sphere of medical treatment, there existed an obvious and relatively pressing need that some early action should be taken to deal with those defects which seriously threatened the physical welfare of the children. The Board had been willing, therefore, to sanction certain experiments in the matter of medical treatment. It was necessary, however, that the Council should understand that the Board now felt it imperative to adopt a more critical attitude in regard to the Council's proposals, and, in particular, that the time was approaching when it would be unable to sanction the adoption of further schemes, even on an experimental basis, unless each particular scheme of treatment proposed had been (*a*) carefully thought out as regards all important details; (*b*) was so framed as to furnish full and definite information on the particular matters with which the experiment was concerned; and (*c*) had been devised so as not to hamper or embarrass the local authority in adopting any comprehensive system of treatment which might commend itself to it in the future. The Board could not too strongly impress on the Council that any satisfactory system of treatment, of necessity, must rest and be contingent upon adequate arrangements, in real working order, for regular medical inspection. As regards the proposals now in question the Board had considerable doubt whether the three conditions just laid down were satisfied even approximately. For instance, it was doubtful whether the Council, in deciding to apply the dental treatment scheme to children of 8 to 9, had selected the most appropriate age-group for conservative dental treatment. The Board noted, of course, that one of the Council's reasons for selecting this group was that arrangements were contemplated for the general medical inspection of children at this period, and that it was expected that the school doctors would be able then to select children for dental treatment. For two reasons, however, the Board doubted the wisdom of basing dental treatment upon the general medical inspection of a third age-group. In the first place, it might prove impossible for the authority to inspect this group in addition to entrants and leavers. The latter was compulsory, but the optional inspection might have to be postponed or only partially carried out. In the second place, experience showed that the findings of school doctors engaged in general inspection could not be adopted in any considerable degree as the basis for arrangements for conservative dental treatment. Reliance on this source of information involved risk of embarrassment and early confusion in the working of the scheme, and a probable failure to discover many cases which needed, and would repay, conservative treatment.

In view of these and other considerations the Board had hesitated to sanction the two proposals now before it, and the Council must not expect that the Board would be prepared to sanction for general or permanent adoption a scheme of dental treatment framed on the lines of these proposals. As they were limited in scope, of local application only, and admittedly put forward as tentative and experimental, the Board had decided to sanction the proposals, since at this juncture it was reluctant to interpose obstacles to any scheme which, however imperfect, offered a prospect of furnishing data for the Council's future guidance. This sanction would be for 12 months and was subject to facilities of inspection being afforded to the Board's medical officers and to a report by the Council upon the general working of the schemes.

The Recommendations of the Royal Commission on the Feeble-minded in Relation to Lunacy Administration in London.

Debate on this matter was postponed last week in order that opportunity might be afforded for discussion when members absent on election business could be present. But the London County Council on Dec. 13th passed the whole of the recommendations of the General Purposes Committee without further consideration.

[1] THE LANCET, Nov. 5th, 1910, p. 1364.

[1] THE LANCET, Dec. 10th, p. 1717.

THE LANCET.

LONDON: SATURDAY, DECEMBER 17, 1910.

"Mania Contionabunda."

MEDICO-PSYCHOLOGY, responsive to what one of its continental votaries calls "the hyperæsthesia of an over-wrought civilisation," is enlarging its terminology coincidently with its subject matter, and now we have the "mania contionabunda" (the "haranguing disease") added to the "mania errabunda" (the "running-to-and-fro disease"), both of them epidemic throughout the British Isles. From Land's End to John o' Groat's, from East Lynn to Galway, the whole country is either on the tramp or on the stump, locomotion personal or vicarious lending itself to oratory shrill or subdued, diffuse or concise. Nor is there any lack of auditors, of ἀκροαταί, whether ξυνειδότες or not, till the mania in question will only cease by wearing itself out, in sheer exhaustion alike of haranguer and hearer. Meanwhile the thoughtful spectator is inclined to ask himself:—Who or what is the gainer from this babel of tongues?

If no one attempted to speak in a public way unless he had something useful and opportune to impart, the tumult and the din would subside to something like the "morne silence" of the French poet, to our manifest advantage. When the prince of orators could say of himself, as he saw his sagacious, sententious antagonist rise to reply, "See the dissector of my arguments gets up"; and when that same antagonist, on the populace applauding him, would turn round to a friend and ask, "Have I said anything particularly irrational?" we may well imagine what a DEMOSTHENES or a PHOCION would think of many a platform declaimer in the day now passing! For, with the fewest possible exceptions, we have only in his declamation what the Scotch professor remarked in a loquacious student, "a determination of words to the mouth," a "relaxation of the mental sphincter," a paralysis of that inhibition which sane and circumspect thinking imposes on the tendency to utterance. One of the many proofs of DICKENS'S power of psychological delineation is his character of FLORA in "Little Dorrit," the amiable, expansive lady whose talk is a palmary specimen of the inhibitory paresis referred to, talk which runs on as continuous as it is inane, sentence suggesting sentence by the faintest links of association, often merely verbal in their affinity. The diction, too, of the platform declaimer is typical of the thought it conveys—diction drawn from what Mr. GEORGE WYNDHAM, in his contrast between NORTH'S "Plutarch" and the version of the brothers LANGHORNE, has called the "charnel-house of decayed metaphor"—diction deliciously quizzed by D'ISRAELI in "Tancred" when, weary of "leaving no stone unturned" before "embarking on the next feature on which this question hinges," he remarks that John Bull is sorely in want of a new set of similes. That greatest parliamentarian of the Victorian era, WILLIAM EWART GLADSTONE, though himself often enough incurring D'ISRAELI'S satire, conveyed a rebuke to much of the "eloquence" of his day, when in his "Homer" he defined the requisites of the public speaker. He must never be over the heads of his hearers; he must have the power of making them feel and think with him; he must have the "obstetric art" (the τέχνη μαιευτική) of SOCRATES, evoking from them sentiments, sympathies, conclusions latent in their minds, but only awaiting the magic touch of his "delivery" to start into life; or in GLADSTONE'S own felicitous words, "What the orator receives from his audience in mist, he gives back to it in rain." Such was the oratory of a PERICLES in the palmy days of Athens; of a CHATHAM in the British Senate; and of a LINCOLN in the great Republic of the West; not the incontinent cerebration which passes for oratory on the modern platform, where, but for the reporter amending him, the orator would turn out as ungrammatical, not to say incoherent in phrase, as but for the same press he would often be poor in ideas.

In a memorable passage published 60 years ago CARLYLE sounds a characteristic note of warning: "Be not a Public Orator, thou brave young British man, thou that art now growing to be something; not a Stump Orator, if thou canst help it. Appeal not to the vulgar, with its long ears and its seats in the Cabinet; hate the profane vulgar and bid it begone! Appeal by silent work, by silent suffering, if there be no work, to the gods who have nobler than seats in the Cabinet for thee!" A warning this as relevant in the day now passing as it was in 1850—a warning intensified by the deterioration of parliamentarianism abroad with its free fights in the Chamber, its scuffles in the lobbies, and its duels in the open—a warning not without significance nearer home, where, particularly north of the Tweed, the pulpit itself is degraded by becoming "a coign of vantage" for partisan pleading, till protests against the practice are to be read *passim* in the public prints—nay, are to be heard from scandalised worshippers in the house of prayer itself! The haranguing disease is on us.

Diet in Disease.

IT is related of GRAVES, in a well-known anecdote, that he said, "If you are at a loss for an epitaph to be placed on my tomb, here is one for you, 'He fed fevers.'" This was some 60 years ago. The two generations of physicians that have practised since his day have, with few exceptions, followed his example. With the very large amount of experimental work that has been done in recent years, more particularly in Germany and America, in the study of the chemical processes of nutrition, we are now much better able than our predecessors were to supply the needs of the patient, without unduly straining his powers of digestion and assimilation. The two perfect foods with which Nature has herself provided us still form, as no doubt will always be the case,

the staple invalid dietary; but inasmuch as milk and eggs are adapted for the needs of the healthy organism, it is not flouting Nature to modify their composition when using them for the sick. Thus the dilution of milk with water, the addition to it of an alkali, its modification so as to form whey, are obvious modes of adapting it to the impaired digestive powers of the fever patient. Such a patient is unable to deal with solid food of any description; and much ingenuity has been shown in the endeavour to extract from the meat that forms a part of the ordinary diet in health so much of the nutritive protein material as may be obtained in a fluid and assimilable form. Beef-tea has, however, long been considered to be little more than an agreeable stimulant, and, however carefully prepared, to have small direct nutritive value, though it may be a means of assisting the assimilation of nutrient materials. We know, at any rate, that it does stimulate, it is readily absorbed, and the contained salines (potassium chloride and sulphate) are of some use. Gelatin, in the old-fashioned form of calves'-foot jelly, at one time considered highly nutritive, has since been relegated to an inferior position as a mere placebo, but it has now been shown to be, though not actually a tissue-former, a protein-sparer of considerable value; it is a means of saving the albuminous waste from the tissues, and "from this point of view cannot be too strongly recommended." We quote here from Dr. CHALMERS WATSON, who, in a work just published,[1] has brought together in compendious form the results of recent research and clinical observation.

Under the conditions that obtain in a normal state of health the relative worth of the various food substances may be readily ascertained by a computation of their calorie values, as to which there is now a general agreement amongst analysts and physiologists; and in this way standard dietaries have been framed for the occupants of public institutions, and for large bodies of persons, such as soldiers and sailors, inmates of workhouses, prisons, and so on. But for the sick the diet has to be adjusted in each instance from a knowledge of the digestive and assimilative powers of the individual patient; little clinical importance can be attached to the calorie value of the food; it is the personal factor that has to be considered in each case. Moreover, in practice it is not unusual to find *a priori* physiological considerations to some extent falsified. Dr. WATSON mentions the group of meat infusions, juices, and extracts as being largely administered, and their usefulness universally admitted. We are aware that many authorities deny that these substances have any physiological value at all worth mentioning; and judging from their chemical composition alone this would appear to be the case, but they continue to be employed, both in hospitals and in private practice; and we believe that the medical profession generally have a high opinion of their value in cases of fever, exhaustion, and acute illness generally. The impressions derived from clinical experience have not, at any rate as yet, given way before the hard facts of laboratory experiment.

[1] Food and Feeding in Health and Disease, a Manual of Practical Dietetics. By Chalmers Watson, M.D., F.R.C.P. Edin. London and Edinburgh: Oliver and Boyd. Pp. 638. Price 10s. 6d. net.

On the other hand, in recent years immense benefit in treatment has resulted from the increase in knowledge regarding the bio-chemical processes that are carried on in the alimentary tract. Bacterial activity in the intestine may be greatly modified by alterations in the diet: a restriction in the protein ingested diminishes putrefactive decomposition, and a reduction in the carbohydrates lessens the development of injurious acids and gases due to fermentation. The contents of the intestine cannot be made aseptic, but dietetic regulation can materially reduce the formation of toxic products. Much attention is nowadays paid to oral sepsis, often due to accumulation of decomposing particles of food between the teeth which eventually leads to a septic condition of the gums and mouth generally. Whether occurring in the mouth or in the intestine sepsis may lead to impairment of health; it arises largely from causes connected with the diet, and by means of dietetic regulation may in most cases be overcome. One particular affection, arterio-sclerosis, though not at first sight connected with conditions of alimentation, being frequently dependent on prolonged high blood pressure, is considered in some cases to result from a poison formed in the intestinal tract; this may arise either from abnormal digestion of proteins (especially of animal origin in constipated subjects); from abnormal fermentation of carbohydrates, or from an excess of nutrient material beyond what can be dealt with by the organism—that is, over-eating. Restriction in animal protein food is indicated, and also careful regulation of the bowels. In functional heart derangements, so often due to indigestion, dietetic treatment is obviously of great importance; but in chronic organic disease of the heart also—for which HAYLE WALSHE, a paramount authority in his time, stated that no constantly applicable rules could be laid down, except that moderation is important, especially in fluids—Dr. WATSON now suggests fairly precise directions, carbohydrate food being especially restricted. It is enough merely to mention gout, diabetes, and asthma as instances of pathological conditions largely dependent on variations from the normal working of the alimentary system, and capable, therefore, of being influenced by dietetic regulation. We have heard much of the advantages of a purin-free dietary: they are undoubted. Dr. WATSON ascribes them rather to the simplicity of the system, which enables it to be carried out more rigidly, and therefore more successfully, than other dietaries framed on conventional lines, than to any specific action associated with the absence of these substances. But in this as in most other advances in dietetic treatment the main feature in the practice of the present day is the application to therapeutics of the large additions that have been made in recent years to our knowledge of the bio-chemical processes carried out in the small and large intestines. Much has been learned, but with increase of knowledge comes fuller appreciation of the complexity of the metabolism at work. What formerly appeared simple, on further investigation is found to be quite the reverse. But, step by step, progress is being made, and, as we have tried to indicate, the therapeutist is keeping in close touch with the physiologist.

Reform at the University of Oxford in Relation to Medicine.

ON April 28th, 1909, the Oxford University Press issued a Memorandum drawn up by Lord CURZON OF KEDLESTON, Chancellor of the University, in which he discussed various proposals and suggestions for reforms dealing mainly with the constitution of the University of Oxford and with certain financial questions. The Hebdomadal Council thereupon held a series of meetings, and eventually passed a number of resolutions pledging itself to a definite scheme of policy upon almost every debated issue of University reform. Committees were appointed to take evidence and to consult authorities with a view of framing plans for the carrying out of the aforesaid resolutions. The reports of these committees were debated line by line in full Council, and the result of this deliberation was the comprehensive report of the Hebdomadal Council which was issued some months ago. No doubt statutes based upon this report, the debate on some of which has already begun, will continue to be submitted during the next few terms to Congregation and Convocation.

On the appearance of Lord CURZON'S Memorandum we commented upon features of it which appeared to us to have a special bearing upon the interests of the medical profession.[1] We pointed out that if, in accordance with the views of the more ardent reformers, all members of Convocation other than those in residence were for certain purposes to be struck off the roll of voters, such disfranchisement would have a most disastrous effect upon the future of the Oxford Medical School, because the majority of Oxford men who seek a medical degree study their medicine outside of Oxford. If such disfranchisement, then, were carried into effect, all the 190 or so medical members of Convocation who are non-resident, and who are either engaged in teaching or have the interests of medical education at heart, might be deprived of any voice in the management of the medical school. We further pointed out that Lord CURZON'S eminently judicial presentment of the various plans for reform did not even take into consideration any reform of this kind, and we merely mentioned it as being the view of one school of reformers. We are glad to see, then, that by the report of the Hebdomadal Council it is proposed to leave the constitution of Convocation practically untouched, so that it will be still the supreme legislative authority of the University. It is suggested, however, that its action should be restricted in certain cases, so that where Congregation has voted unanimously on any statute in its final form, such shall become law without being referred to Convocation, and also that any statute which shall have been passed in its final stage by a two-thirds majority of Congregation shall take effect, unless Convocation rejects it by a two-thirds majority of those voting. The voting power of the medical members of Convocation outside of Oxford would therefore remain practically unaltered. We understand that even this alteration of the powers of Convocation would require an Act of Parliament, and therefore assume that this part of the scheme will not be proceeded with. That portion of the report which is of most direct interest to the medical profession is embodied in a statute, where it appears as Sectio VIII., "Of the Faculty of Medicine and of the Board of that Faculty." By this section it is proposed that the Faculty of Medicine should receive special treatment, and, unlike any other faculty, should possess a General Medical Electorate consisting of all Oxford graduates in medicine who are members of Convocation. The Board of the Faculty is to include *ex officio* members—namely, the various professors and readers in the faculty and the representative of the University on the General Medical Council; nominated members, three in number, who are to be chosen by the Board of the Faculty of Natural Science as representing physics and chemistry, zoology and botany, and organic chemistry in relation to physiology and medicine; elected members, six in number—i.e., three being members of, and elected by, the faculty, and three being members of, and elected by, the General Electorate aforesaid. At least two of the latter shall be engaged in teaching one or more of clinical subjects of the faculty. There may be in addition not more than four co-opted members, of whom at least half shall be engaged in teaching clinical subjects. The three members of the Board elected by the General Electorate shall be elected annually, and nominations must be made by not less than six members of that Electorate. Among other powers, the Board of the faculty is to have power to institute a University Medical Students Register. This scheme, to which the deliberations of committees of the Hebdomadal Council and of the Council itself have given rise, may, of course, undergo alterations at the hands of Congregation and Convocation, but as it stands we welcome it as an honest and painstaking attempt to bring the teaching of medicine at, and the Medical School of, the University into touch with those medical graduates whose lot in life it is to teach and to practise medicine without the walls of their University.

The provision of the General Medical Electorate is, in our opinion, a valuable one, and we earnestly hope that this part of the scheme may pass without serious amendment. It is a scheme which possesses, or should possess, the rare excellence of reconciling the two diverse parties—viz., the ardent reformers and those who wish to maintain the mediæval methods of government and constitution of the University. The former should welcome it, inasmuch as it provides that those engaged in the teaching and practice of the subject of a faculty should be those who have the right to vote upon, and to take part in, matters affecting that faculty. To the latter it should be no less welcome in that it is a return to the mediæval idea that all the members of the "universitas," or guild of teachers, should be consulted before a new candidate was admitted to their number. In the beginning the University of Oxford was simply a guild of Masters of Arts and the votes of all the Masters had to be taken before a new Master was admitted. And when other faculties came into existence the consent of the Masters was still necessary, and in theory is still asked at Congregation by that curious, but—if rightly understood—dignified, survival the Proctors' walk. The calling into the counsels of the Faculty of Medicine all the graduates in that Faculty is therefore not so much an innovation as an expansion of one

[1] THE LANCET, May 29th, 1909.

of the oldest of University customs, for although the Medical Electorate as such will not be consulted as to admission of candidates to a degree, yet its members will have a voice in their teaching and training for a degree in medicine.

Annotations.

"Ne quid nimis."

THE GENERAL ELECTION AND PUBLIC HEALTH.

THE occurrence of general elections in relatively rapid sequence is not in the interests of public health. At no time, indeed, can it be said that a general election is conducive to physical well-being, since it is a time of some tension—it involves certain work generally carried out under trying circumstances which are not calculated to influence the health favourably. The general election is a time, for example, when great meetings are held; vast concourses of people are brought together in a confined space in which, in most instances, the call for an unlimited supply of pure air is not met; diseases chiefly of the respiratory order are consequently easily communicated and spread. "I caught a cold and sore-throat at the political meeting last week," is an observation commonly overheard just now. Again, there is the street meeting, which, although the air may be fresh, is held sometimes under conditions of a most exacting kind on the health. Crowds of eager voters will be found huddled together listening to political arguments in pouring rain or in the blast of a biting wind, and is it matter for wonder that a good percentage of the audience gathered together under such circumstances contracts respiratory trouble, neuralgia, and rheumatism? Then either the exuberance or depression of the spirits dependent upon the success or failure of the party to which they belong leads many individuals to alcohol, the political clubs and the village public-houses are crowded, drinks are indulged in to console on the one hand or on the other to celebrate success, and the cause of health is badly served. The rowdyism of the modern election is of a very mild type compared with that of the days of George II., vividly illustrated by Hogarth in his "Election Series," though discreditable events have been freely reported during the past ten days; but physical violence appears to have given way to a policy of wilfully misrepresenting facts. It has not been uncommon to see two newspaper bills side by side with diametrically opposed statements set out in big type upon them. We believe veritably that rowdyism was preferable to this crude mendacity. A broken head may be a more definite medical lesion than an affronted intelligence, but the irritation that has been caused by partisan journalism during the last fortnight has told on the nerves of the nation much as an epidemic might have done.

THE MEDICAL DIRECTORY, 1911.

THE annual Medical Directory[1] for 1911 has been issued by Messrs. J. and A. Churchill and fully sustains the reputation that the previous 66 issues have achieved for it. Reference to the table summarising the geographical distribution of the profession shows that the total increase of registered practitioners for the past year is 173. London shows a decrease of 12 and the services of two, an increase in the other sections being shown as follows: Provinces, 153; Wales, 22; Scotland, 11; Ireland, 1; while those resident abroad number exactly the same as in the previous year. The total number of registered practitioners is 40,642, distributed as follows: London, 6415; Provinces, 17,721; Wales, 1336; Scotland, 3958; Ireland, 2724; abroad, 5188; and the services, 3300. To the customary useful information concerning sanatoriums, institutions, laws affecting the profession, climatic resorts, &c., there have been added a new list of coroners, which occupies over four pages; a summary of the law as to cremations "in view of the steady increase of the number of cremations"; and information concerning the motor-car and petrol rebates allowed by the Finance Act to medical practitioners, details of which have already appeared in THE LANCET. The list of British health resorts, compiled by Mr. Norman Hay Forbes, F.R.C.S. Edin., which formed a new feature in last year's Directory, has been thoroughly revised, and its scope has been enlarged so as to include the principal continental spas and climatic health resorts, the information concerning which, so far as we have been able to test it, appears to be accurate and sufficiently complete. The increase in size of the volume to 2168 pages has not affected the price, which remains at 14*s*.

[1] The Medical Directory, 1911. London: J. and A. Churchill. 8p. xxxviii. + 2130. Price 14*s*. net.

THE CARBOLIC COEFFICIENT OF ESSENTIAL OILS.

SINCE the value of essential oils in their application, at all events, to medicine, depends probably upon their antiseptic power, the determination of this power is important. Following THE LANCET method which was set out in the report of THE LANCET Commission on Disinfectants, with slight modifications, Mr. W. Harrison Martindale has recently published an interesting series of figures which purport to give the phenol coefficient of the chief essential oils, in an article published in the November number of the *Perfumery and Essential Oil Record*. The results are summarised in the following table, the carbolic acid coefficients there recorded being the mean of the two results obtained with 2 minutes' and 30 minutes' contact respectively:—

Essential oil dilution.	Carbolic acid coefficient.
Origanum oil (aqueous)	25·76
Thymol (saponaceous solution)	25·29
Carvacrol	21·32
Thymol (in aqueous solution)	19·41
Thyme oil (in soap)	14·85
Thyme oil (aqueous)	13·38
Geraniol (in soap)	12·29
Cinnamon leaf oil (in soap)	9·66
Oil of cinnamon cortex (in soap) (52 per cent. aldehyde)	8·91
Oil of cloves (in soap)	8·88
Cinnamic aldehyde (in soap)	8·02
Citronellol (in soap)	8·11
Oil of cinnamon (82 per cent. aldehyde) (in soap)	7·92
Rosemary oil	5·94
Otto of rose (in soap)	5·94
Cassia oil (in soap)	5·94
Wintergreen oil (in soap)	4·64
Eucalypt. amygd. (in soap)	4·35
Lavender oil (English) (in soap)	4·94
Lemon oil (in soap)	3·94
Almond oil (in soap)	3·76
Eucalyptol (in soap)	3·76
Eucalypt. glob. oil	3·55
Light oil of tar (rectified)	2·17
Santal oil	1·67
Birch tar oil	1·67

It will be noted that in the majority of instances the oils were tested in saponaceous solution—that is to say, a limpid solution which throws out on dilution the oil globules in a fine state of subdivision. There is no information given as to the relative physical condition of the emulsions tested,

and it is apparently assumed that the state of subdivision in all cases was the same. If that was not the case, the relative values of the oils in regard to carbolic coefficiency may not necessarily be dependent upon the essential constituent, for undoubtedly a greater inhibitory action on organisms is shown by a perfectly uniform emulsion, in which the separated particles are exceedingly fine, than by an emulsion which exhibits irregularities or suspended particles varying in dimensions. It is interesting to note, however, that origanum oil, which heads the list, was found to give much the same germicidal effect whether used in aqueous or saponaceous solution. Generally speaking, however, the saponaceous solutions showed to advantage when compared with aqueous solutions—e.g., thymol in the above table. The results are extremely interesting and go to show that we are not necessarily dependent upon disagreeably smelling phenol compounds as the basis of strong germicidal preparations.

A COLD NOVEMBER.

NOVEMBER was in many respects an unusual month. It was in no wise remarkable for its fog, although London and some other localities were not quite exempt. In the matter of fogs, however, November has obtained an evil name somewhat undeservedly, for it is a fact fully proved by statistics that it is not so foggy, as a general rule, as either December or January. The first taste of London winter fogs generally occurs some time during November, and perhaps the first visitation makes more impression on the public memory than the later ones, however more unpleasant they may be. The chief feature of last month was its low temperature: it was not that there was a continued frost such as that which made skating possible during November a few years ago, but the persistent manner in which the thermometer remained several degrees below the average during the daytime, and the frequency of frosts—often of relatively slight intensity—at night. During a considerable portion of the month the temperature ranged between 5° and 7° below that ordinarily experienced at the time of year, and was generally at least 4° below it. In London the mean afternoon warmth was about 4° less than usual, and that of the nights 5½° less, while in some other parts of the country the divergence from the normal was greater. The coldest nights showed minimum temperatures of 25° (on the 18th, 22nd, and 23rd) by the screened thermometer in St. James's Park, and frost of lesser severity was recorded on as many as 15 other nights. The month was also very wet, and this is a quite rare combination for the time of year. In the summer a wet period is almost always a cool one, but the reverse is generally the case after October. A cool summer month has, with a rare exception, a relatively poor supply of sunshine, and a wet November is usually very gloomy. In the present case, however, the duration of sunshine was almost everywhere in excess of the normal. Even Westminster, which scarcely saw the sun for more than a minute after the 21st, recorded 36 hours, which is equal to an excess of 20 minutes per day, and at places on the coast the figure was very high for the season. In many parts of the kingdom the rainfall was abnormally heavy. In the western and south-western districts hardly a day passed without a measurable quantity finding its way into the gauge, and some northern districts were little better, while the extreme south-east, although not so interruptedly rainy, has a very heavy total. One of the wettest spots was, indeed, the south coast of Kent, where the aggregate amounted to nearly 7 inches, or more than that on the west coast of Ireland and in the rainy Hebrides. But the most hopelessly wet region was the Channel Islands. At Jersey there were only three days without rain, and the total fall, 10·85 inches, is probably without a record for November, and it may be for any other month. In London the falls were not so heavy, and 19 days with rain yielded no more than 2·87 inches. The wet conditions were not experienced in this country only. France as a whole was almost as rainy, and in some departments even more so, while the resulting inundation was certainly far more serious. In the well-known south-western corner of France in which Biarritz is situated there were about as many rainy days as in London, and the actual fall was not far short of twice as great. The Riviera was a fortunate exception, the greater part of the month being fine and mild or warm, and the rain coming down in one or two semi-tropical downpours. A great deal of rain fell in Italy, as is generally the rule in the late autumn, but the weather in its main aspects was not unfavourable, the sun shining brightly for some hours on a great proportion of the days, and the thermometer seldom failing to reach the genial figure of 60° in the shade except in the inland northern districts. In Sicily and Malta shade temperatures of 70° or higher were of almost daily occurrence, and the weather of the month was composed of the agreeable mixture of occasional rain divided by many days of clear or nearly cloudless skies. Algeria was as warm as London during an average July, the sky nearly always clear, and rain very infrequent.

BRACHIAL NEURITIS FROM PRESSURE OF THE FIRST RIB.

IN recent years attention has been called to the fact that obscure cases of nervous symptoms in the arm may be due to the presence of a cervical rib which presses on the brachial plexus. In the *Australian Medical Journal* for October Dr. Thomas Murphy has reported a case of this class in which the symptoms were due, not to a supernumerary rib, but to the normal first rib. No case of this kind appears to have been previously recorded. A single woman, aged 28 years, came under observation in June, 1910, complaining of pain, numbness, coldness, tenderness, and weakness in the left shoulder and arm and swelling and dusky-blue discolouration of the hand. The symptoms were worse after exerting the arms, as in tennis or typewriting. They were severe and always present in winter, but present only after exertion in summer. The first attack occurred in 1902, when the pain was severe, and she was treated for neuralgia. In the winters of 1903 and 1904 the symptoms were much the same. In 1905 the pain was more severe and the hand became swollen and dusky-blue. In 1906, in addition, she complained of a feeling of fatigue in the left shoulder and across the left side of the chest, and a "cramped feeling" in the throat, and at times could not swallow. In 1908 the arm and forearm were markedly wasted. In 1909 the symptoms were less severe. On examination the arm, forearm, and hand were tender throughout. The hand and forearm were cold. The wrist and hand were swollen and dusky-blue, suggesting severe chilblains. There was no œdema, such as would point to pressure on venous trunks. There was some loss of power in the arm and hand; the latter could not be closed. Some wasting of the forearm and impairment of sensation in the hand were found. The signs and symptoms pointed to neuritis. On pressure over the brachial plexus in the neck, behind the sterno-mastoid, a tender point of resistance was found, and shooting pain in the arm was produced. The possibility of a cervical rib suggested itself, but a skiagram failed to show one. However, in view of the resistance and tenderness in the neck, operation was advised. While the patient was being anæsthetised pressure on the brachial plexus caused twitching of the arm. An L-shaped incision was made behind the posterior border of the sterno-mastoid.

On incising the deep fascia the brachial plexus was exposed lying on the glistening insertion of the scalenus medius. The plexus was drawn inwards and the point of resistance, noticed before the operation, was found to consist of the insertion of the scalenus into the rib. This insertio with the bone gave the sensation of a swelling, over which the plexus passed. The muscle was divided near its insertion and the bone exposed. There was no swelling on the rib, which was cut through with forceps at the insertion of the muscle and then removed piecemeal, the soft parts being protected with a blunt spatula. A smooth bed was left for the plexus when replaced. The deep fascia was sutured with catgut and the wound closed. The operation was completed at mid-day, and at 5 P.M. the patient drew attention to the fact that her hand was white and normal in colour, though it had been dusky-blue for three months. After a week she could close her hand perfectly. The symptoms disappeared and the pain did not return in spite of exertion such as typewriting in extremely cold weather, and the arm and hand regained power. A skiagram taken after the operation verified the fact that the first rib and not a supernumerary rib had been removed. The symptoms produced on exertion appeared to have been due to the rolling motion which the scalenus medius on contracting would cause in the already stretched plexus at the point where the nerve trunks passed over the prominence made by the insertion of the muscle into the bone. Dr. Murphy saw a case of operation for suspected cervical rib in London last year, in which no such rib was found. He suggests that the case was probably similar to his. An apparently normal first rib, it seems, may cause severe nerve symptoms, a fact which throws light on some hitherto obscure cases.

A CLEAN MILK CAMPAIGN.

IN order to consolidate public opinion in readiness for the time when general legislation will be introduced for the purification of our milk, a joint committee of the National League for Physical Education and Improvement and the National Health Society has prepared and issued three leaflets, addressed to farmers and producers, to distributers and retailers, and to housewives and all consumers of milk respectively. They are brief, clear, and concise, and having been prepared by a committee, including representatives of the medical, veterinary, and legal professions, of the Local Government Board, local authorities, and farmers and dairymen, the directions and advice given may be taken to be both soundly scientific and practical. Much attention has lately been directed to the purification of the milk-supply, and local authorities have obtained and are using powers to trace to their source certain forms of milk contamination, notably tuberculosis. In addition to these special powers all local authorities have the power and duty of compelling cleanliness in dairies, cowsheds, and milkshops, ensuring as far as possible freedom from contamination until the milk is in the hands of the consumer. These measures often fail in their effect through lack of public opinion to support them, and they are in many instances rendered futile by the ignorance and carelessness of consumers. It is important to success that vendors should realise that the reputation for clean milk is essential to their own interests, and such admirable rules as the suspension from duty for considerable periods without loss of wages of dairymen in whose homes infectious diseases have arisen should lead the public to patronise those dairy companies which make and keep them. Such a rule is itself a guarantee that the other precautions necessary for obtaining uncontaminated milk are carried out in these establishments. When Bills have been passed, and supervision of production and control of distribution have been obtained, the problem will still remain of educating the consumer, and it is to such national societies as these, which have prepared and are circulating advice and information among the people, that the lot will fall of overcoming the last line of resistance to a purer milk-supply.

REFLEX ANURIA.

THE subject of reflex anuria is difficult and in need of further elucidation. In the *Medical Review* for December is related an instructive case, taken from the Archives of the Middlesex Hospital. A stout multipara, aged 49 years, was admitted under the care of Sir A. Pearce Gould on March 1st, 1910. Six years previously she was seized with severe pain in the left lumbar region which lasted several hours. Similar attacks followed, the last on Feb. 18th. Attacks of pain also occurred in the right loin but were neither so frequent nor severe as on the left side. The pain was accompanied by vomiting and constipation and inability to pass urine. Before the attacks she noticed that the urine was dark, and she thought she had seen streaks of blood in it. In consequence of her stoutness abdominal examination was difficult. Both lumbar regions were tender, and there was dulness in the left flank, which did not shift with her position. The urine varied in specific gravity from 1005 to 1012, was slightly alkaline, and always contained albumin and sometimes a little pus and blood. Skiagraphy showed three shadows in the left kidney but nothing in the right. As obesity rendered her an unfavourable subject for operation, and the symptoms were somewhat ambiguous, she was kept under observation. She complained of pain across the lower abdomen, and only with difficulty could it be found that she had more pain on the left than on the right side, and that there was more tenderness in the left flank than in the right. On March 14th the left kidney was exposed from the loin and found enlarged and mottled. It was incised and three irregular oxalate of lime calculi were extracted from dilated pus-containing calyces. The section of the kidney was grey and yellow, and the organ was obviously much diseased. A drainage-tube was inserted. After the operation the urine contained more pus, but was excreted in considerable quantity. She did well until April 9th, when she was quiet and almost apathetic. The total urine passed per urethram, which had averaged 50 ounces, fell on the 8th to 15 ounces; on the 9th and 10th not a drop was excreted; on the 11th only half an ounce; and on the 12th 1 ounce. From the wound only a little pus was escaping. The urine was very turbid and contained only 0·1 per cent. of urea. It was concluded that there was anuria from blocking of the right ureter by a calculus which had probably been the cause of the pain on that side and was too small to be shown in a skiagram in so stout a woman. Operation on the right kidney was urged, but declined. Hypodermic injections of pilocarpine, diuretin, and saline enemata were repeatedly given and she sweated profusely. On the 12th she was very weak, but there were no definite uræmic symptoms and permission for an operation was given. On exposing the right kidney from the loin a small stone was found impacted in the neck of the ureter, and a bougie was passed down into the bladder to make sure that there was no other calculus. Urine flowed from the ureteral wound as soon as the stone was extracted. A drainage-tube was inserted. She rapidly improved and on the 15th passed 20 ounces of urine per urethram, and by the 19th the quantity had increased to 45 ounces. In May she had completely recovered except for a sinus in the left loin. Sir A. Pearce Gould explains the symptoms as follows. When the small calculus in the right kidney passed into the narrow neck of the ureter it not only prevented the passage of urine but arrested the secretion of the opposite kidney by reflex

stimulation of the vaso-constrictor nerves and inhibition of the secretory nerves. After its removal, while the urine from the right kidney was escaping through the drainage-tube, urine quickly appeared in the bladder, mostly, if not wholly, from the left kidney. Further evidence of the influence of the impacted stone upon the secretion of the opposite kidney is the fact that urea in the urine passed after the operation rose to over 1 per cent. in contrast to the 0·1 per cent. before. This reflex arrest of secretion in a diseased kidney by impaction of a calculus in the opposite ureter is analogous to the anuria occasionally caused by a urethral operation when the kidneys are diseased. It is an interesting example of the fact that reflex effects depend partly on the condition of the part to which the efferent impulse is sent. Indeed, it is believed that calculous occlusion of one ureter never causes fatal anuria if the opposite kidney and ureter are healthy.

THE OVER-HEATING OF HOUSES.

THE excessive humidity which has characterised the weather during the year now drawing to a close, and more particularly throughout the month of November, has redirected attention to the much-debated question as to the methods of heating best adapted in this country for comfort as well as health. We are often accused of being old-fashioned, especially by Americans, and nothing surprises our professional brethren from the other side more, used as they are to hot air or steam heat even in private houses, than the open fire-places still found in many of our hospitals. That their more "up-to-date" methods are not free from defects is, however, being gradually forced upon the American nation, and it is not without significance, therefore, to find that the *Boston Medical and Surgical Journal* of Nov. 17th has been inveighing against them in no uncertain terms. According to this authority, the average temperature of the American furnace-heated home is 76° F., as contrasted with 60° F. in England. But it is in the comparative humidity that the most striking difference lies. We are not afraid of moist air; it is responsible for the clear complexions, and absence of wrinkles, characteristic of us, although, it is true, it renders us more liable to rheumatoid affections unless carefully regulated. The average humidity in the United States and Canada is very much less than in this country, but the Canadian and American take care to reduce the proportion still more by their customary methods of heating. Indeed, to such a degree is this carried out that the humidity often falls as low as 16, according to the article from which we are quoting, which is about half the humidity of the Desert of the Sahara, the mean humidity of which is stated to be 30. The consequences of this extraordinary dryness in the atmosphere of the home are not without manifestation. The surface moisture of the body is eagerly absorbed by the parched air, the mucous membranes of the throat, nose, and pharynx become dry, congested, and liable to any prevalent infection, and the heat-regulating mechanism of the body fails to react when its owner has to go out into the cold. As a result the "great American cold" of Elizabeth Robins, the "fall cold" of the lay papers, and the "chronic American naso-pharyngeal catarrh" of the medical press has the nation in its grip every succeeding winter, and the "one-night-cough-cure" quacks, the numerous, much advertised "anti-catarrh" remedies, and the makers of "cuspidors" reap a plentiful harvest, while extra labour is also thrown upon the medical profession. The *Boston Medical and Surgical Journal* roundly states that the super-heated American house is "a medical barbarism and an anachronism in this age of enlightened progress." Many English medical men have had the same view when sojourning across the Atlantic; but, on the other hand, it cannot be denied that we, here, err in the opposite direction, for draughty corridors, ice-cold bedrooms, and chilly living-rooms claim their quota of victims each succeeding winter. The happy medium in this country would seem to be an employment of the two methods, utilising the ventilating powers of the open fire as well as the equable heat given out by the steam radiator, but only a few of our more modern dwellings as yet offer such a combination.

THE ULTIMATE RESULTS OF GASTRO-ENTEROSTOMY.

GASTRO-ENTEROSTOMY has for some years enjoyed a high reputation in the treatment of many disorders of the stomach, both obvious and obscure, and although its reputation is not quite what it was, yet it is still employed frequently by many surgeons. This is not surprising, for in most cases the temporary results, at least, are very good, while the patient is in bed in hospital and is judiciously dieted. The permanent results, too, in some cases are truly wonderful. Patients who have been in a state of chronic invalidism for 10 or 20 years have, as it were, regained their youth and the health and freedom from gastric disturbance so characteristic of the young. Many physicians, however, have seen no small number of patients who have suffered from a return of the symptoms after having undergone the operation of gastro-enterostomy, and it occurred to Dr. Otto May, when he was medical registrar to the Middlesex Hospital, that it would be of interest and value to trace the after-history of patients on whom the operation of gastro-enterostomy had been performed at that hospital. He excluded all malignant cases, for obviously they could afford no information of value. He selected the three years 1906, 1907, and 1908, so that sufficient time might have elapsed between the performance of the operation and the date of investigation. Of the 90 patients upon whom the operation had been performed he was able to obtain information as to the results in 65. In order to arrange the results statistically he divided the cases into four groups. In the first are those in whom the result is entirely satisfactory; they can do their usual work without discomfort, provided they use reasonable care in their dietary. In the second class he puts those where occasional attacks of pain or vomiting occur in spite of ordinary care, but where considerable improvement has resulted. In the third class are those in whom slight improvement has occurred, but the gastric conditions are sufficiently troublesome to interfere seriously with the capacity for work. In the last class Dr. May puts those cases in whom no definite improvement can be found. As to the results, rather less than half (46 per cent.) were "cured," while another 20 per cent. were greatly relieved, but in 23 per cent. of the whole the operation had to be described as a total failure, and only slight benefit had occurred in the remaining 11 per cent. The cases which gave almost uniformly good results belonged to two classes: (1) dilatation of the stomach caused by pyloric obstruction; and (2) duodenal ulcer. Apparently, also, some cases of gastric ulcer without pyloric obstruction received much benefit. Dr. May comes to the conclusion that gastro-enterostomy is contra-indicated in that fairly large class of women who suffer from pain and flatulence, but in whom no definite evidence of organic trouble can be found. He suggests that the fundamental indication for the operation is marked delay in the emptying of the stomach after a simple test meal, and he thinks that the skiagraphic method is the most trustworthy one for this determination. We might also mention that although the numbers of men and women patients in the series were almost equal, 34 of the patients being men and 31 women, yet of the men 22

completely recovered but only 8 of the women. It is worthy of note that in five of the cases of women the stomach and duodenum appeared normal at operation, and in these the results were almost uniformly unfavourable. We think that Dr. May has done a very useful piece of work much needed at the present time.

PLURALISM AND THE LEEDS GENERAL INFIRMARY.

ON Nov. 18th the weekly board of the General Infirmary at Leeds passed the following new rule, which was considered and confirmed at a meeting of subscribers held on Dec. 8th:—

That from and after Jan. 1st, 1916, members of the full honorary staff shall not hold any other honorary hospital appointment than their appointment at the Infirmary.

That from and after Jan. 1st, 1916, members of the assistant honorary staff shall not hold more than one honorary hospital or dispensary appointment in addition to their appointment at the Infirmary, and that such additional appointment must not involve the charge of beds.

Provided that this shall not be held to prevent members of the staff from holding consulting appointments at other hospitals, appointments at the University of Leeds, or appointments to offices in the Territorial Medical Force, or (so long as they are not elected to a different position from that now held by them) from retaining appointments now held by them.

The question of pluralism in hospital appointments is one which promises in future to engage the attention of the medical profession more closely than hitherto. It is a question upon which opposing views are held, not only because individual interests clash, but also on the general principles involved. Whether it is better or worse for particular institutions and for medical science that the members of the medical and surgical staffs should also hold similar appointments elsewhere, or that their services and skill, gratuitously given, should be monopolised by the institutions to which they first become attached, are questions to which a well-considered answer may be required. The sweeping away of old institutions is liable in most cases to lead to individual hardship, but that the new rule in Leeds will not operate harshly is indicated by the provision made in the last paragraph to exclude present members of the staff from its scope so long as they continue to hold their present posts at the infirmary, and also by the date, five years hence, at which the rule is to become operative.

FIGHTING DIPHTHERIA AT CHICAGO.

THE Department of Health of Chicago has issued an appeal to the inhabitants of that great city to assist in the prevention of diphtheria. It is claimed that during the last 14 years 25,678 deaths from diphtheria have been prevented, and this is mainly due to the use of antitoxin. The average annual death-rate from diphtheria before the introduction of antitoxin was 138 per 100,000 of the population. During the 14 years that antitoxin has been applied the average annual death-rate from diphtheria only amounts to 36 per 100,000 inhabitants. Still the sanitary authorities are not satisfied. They maintain that practically there should be no deaths from this cause, as antitoxin, if given in proper doses and at the proper time, will cure the disease, while the immunising dose will prevent its development if taken in time by those exposed to infection. The deaths that still occur are attributed to ignorance, carelessness, and neglect. Sometimes this may be the fault of the medical attendant, but in the vast majority of cases the parents are the guilty parties. The chief difficulty is to persuade parents not to neglect what appears to be an ordinary sore-throat. Thus, in two schools 11 children were found with diphtheria bacilli in their throats. The bacteriological examination of swabs from the throats should be the common practice; and if the medical attendant will not do this, or the patient cannot afford to give the necessary fee, the Chicago Health Department physicians undertake the examination gratuitously. Further, no less than 28 free antitoxin stations have been established in various districts. The remedy, therefore, is close at hand and gratuitous for all. If lives are still lost, it is simply because the persons concerned do not avail themselves with sufficient promptitude of these advantages. According to the experience acquired during the last 14 years at Chicago, it is stated by the Health Department that recovery is certain if antitoxin is given the first day the disease is manifest. Should this be delayed to the second day the patient in nearly all cases will be saved. Even on the third day most children will recover. But if the antitoxin is not given before the fourth day, then there will be many deaths. After the fourth day antitoxin does little or no good. When given on the first day, 2000 units generally suffice. On the third day 5000 units are required, and on or after the fourth day 10,000 units are rarely of any service. As all that is necessary can be obtained gratuitously, poverty is no excuse for neglect. The State of Illinois supplies all medical practitioners with antitoxin free in exchange for a filled-up form to facilitate the furnishing of the demographic statistics. The penalty for not supplying these details concerning the case treated is the refusal to give any more antitoxin. Culture outfits for collecting samples from suspected throats to be bacteriologically examined are kept at all the police stations. Therefore they can be promptly obtained, and there is no loss of time in the analysis when once the samples are in the hands of the health authorities. Thus, the bacteriological diagnosis is quickly obtained and the proper life-saving measures can be taken at once. All that is needed is intelligent action on the part of the parents or guardians of the patient. This organisation and the excellent results attained, even amongst such a mixed population as that of Chicago, merit to be studied and imitated, which is certainly the sincerest form of flattery.

THE SPECIFIC DIAGNOSIS OF PULMONARY TUBERCULOSIS.

IT is now a platitude to state that the earlier the stage in which pulmonary tuberculosis is diagnosed the greater are the chances of success in treatment. A large amount has been written in reference to the means at the disposal of the physician to assist him in arriving at a conclusion apart from actual physical examination of the patient, for in a large number of the early cases the physical signs are indefinite and would not by themselves justify a positive diagnosis. It is, therefore, of the highest importance that careful and repeated investigations should be made into the reliability of the auxiliary methods of diagnosis which are employed by the worker in the laboratory in collaboration with the physician at the bedside. We publish this week an instructive paper on this subject by Dr. A. C. Inman, the superintendent of the laboratories of the Brompton Hospital for Consumption and Diseases of the Chest. He gives a valuable summary of the work accomplished by other observers and adds some interesting results of his own observations. The value of the detection of tubercle bacilli in the sputum is generally recognised. The Ziehl-Neelsen is the method that is most usually employed, but Dr. Inman recommends the antiformin method of Uhlenhuth and Xylander as being superior to all others. The examination of the blood for tubercle bacilli has not yielded uniform results in the hands of different observers, and is not likely to be of value in ordinary clinical work. Dr. Inman draws attention to the presence of the pathogenic bacilli in the stools of tuberculous patients. Of 26 adults 18 had tubercle bacilli in the sputum, and of these 16 had tubercle bacilli in the fæces. He suggests that the

appearance of the bacilli in the stools of early cases of pulmonary tuberculosis, in the absence of intestinal tuberculosis, results from the swallowing of sputum secreted in an open tuberculous focus in the lungs. This may be of value in the case of those patients who habitually swallow their sputum. Especial interest attaches to Dr. Inman's remarks on the tuberculin test in tuberculosis. It was at one time thought that a positive reaction to tuberculin indicated active tuberculosis, and that therefore energetic treatment was necessary. The observations of investigators from various countries indicate that this conclusion must now be modified. With regard to von Pirquet's cutaneous reaction, Dr. Inman repeats the opinion that has been widely expressed—namely, that the reaction is of value and is eminently specific in the case of young children, but it may only show the presence of latent tuberculosis in adults, for 70 per cent. of apparently healthy ones give a positive reaction. The same remark applies to the ophthalmo-reaction. Further, a negative reaction does not prove the absence of active tuberculosis. In regard to the subcutaneous tuberculin test Dr. Inman speaks with no uncertain voice. He considers that little importance is to be attached to the reaction at the site of inoculation, and as regards the febrile reaction he believes that it may now be definitely affirmed that it is not specific. On the other hand, he holds to the view that the focal reaction in the lungs is specific, and that consequently a careful physical examination of the lungs is demanded. This once again emphasises the importance of a close collaboration between the physician and his colleague in the laboratory. The old dictum that in order to arrive at a correct diagnosis in a supposed case of pulmonary tuberculosis there must be present an assemblage of signs and progression of symptoms is as true to-day as ever. Dr. Inman has made an extended research into the diagnostic value of the opsonic index. He insists that unless the opsonic index falls well outside the normal limits no deductions should be drawn from a single observation. This is of importance, as sometimes it is sought to arrive at a conclusion from one examination. The method he advocates is to examine the blood before and after walking exercise. He draws attention to the fact that the amount of exercise performed may be insufficient to activate the serum, but he considers that the physician alone must determine whether a second estimation after increased exercise is desirable. For Dr. Inman's classification of his results we refer our readers to the original paper, but his method undoubtedly seems to afford a valuable and reliable addition to the auxiliary measures for diagnosis in cases of doubtful tuberculosis. From time to time it is wise to take stock of methods, both clinical and laboratory, which have been in use for some time. New observations necessitate that old opinions should be abandoned or modified, and it is particularly with this object in view that articles like the one to which we have drawn attention are to be welcomed and carefully studied.

LARGE INCISIONS.

THE most suitable length of an incision is not always easy to determine. On the one hand, the incision should be sufficiently large to enable the surgeon to carry out fully what is needed, for nothing is more embarrassing than to have to operate through too small an incision, and the damage to the tissues caused by undue stretching may more than counterbalance any good resulting from the smallness of the skin wound. A long incision, if aseptic, takes no longer to heal than one which is small. On the other hand, an incision may be too long; the least important argument against a long wound is the unsightliness of the scar, though this may be of some moment if it is on a part of the body exposed to view. There are other and more obvious objections against an incision unnecessarily long, and these have been put forward in a letter from a correspondent in this issue of THE LANCET. He points out that in abdominal operations a long incision means much exposure and chilling of the abdominal viscera, and this may suffice to turn the scale against the patient in a serious case. In any laparotomy the length of the incision must depend on the condition present, but, other things being equal, the smaller the incision the better, for, in addition to the reasons already mentioned, certainly a small incision is less likely to be followed by a hernia.

THE OXIDATION OF PHENOL BY CERTAIN BACTERIA IN PURE CULTURE.

AN interesting communication was read at a recent meeting of the Royal Society in which Messrs. Gilbert S. Fowler, Edward Ardern, and William F. Lockett announced that in the course of their investigations on the effect of various antiseptic substances on bacterial sewage filters, they had observed that solutions of pure phenol could be oxidised on filters of this description. The phenol apparently exerted a selective action on the bacteria present in the filter, only three or four types of organism appearing in the filtrates. Of these, about half were liquefying organisms identified as B. liquefaciens fluorescens. At first it was thought that the main non-liquefying or extremely slowly liquefying organism was B. fluorescens non-liquefaciens, on account of the apparently fluorescent yellow colonies it produced; subsequent investigation showed that this was not the case. Dr. E. J. Sidebotham, of the Public Health Laboratory, Manchester, identified the chromogenic organism as a non-motile bacillus, no cilia, occurring often in pairs, no chains. In general the characteristics appear to be similar to those of B. helvolus (Zimmermann), which in gelatin forms a button-like growth of a Naples-yellow colour. On agar also it produces a thick Naples-yellow growth, and on potato there develops an abundant yellow expansion. Evidence was obtained showing that a pure culture of the organism was capable of oxidising phenol, whilst no change was noted in the phenol content of solutions containing "dead" cultures. Similarly, no change was observed in the phenol content of solutions of pure phenol. Experiments are being carried out to determine the exact effect upon the oxidation of phenol by this organism, and by the addition of other nutrient substances, one experiment having shown that the addition of broth accelerated the action. Researches have also been in progress on the bacterial oxidation of sulphocyanates, which appears to be more complex and certainly less rapidly effected than the oxidation of phenol, inasmuch as when a mixture of the two substances is submitted to bacterial oxidation the phenol is invariably the first to disappear.

Mr. Benjamin C. Broomhall, F.R.C.S. Eng., L.R.C.P. Lond., has been granted the Royal licence and authority to accept and wear the Third Class, First Division, Imperial Chinese Order of the Double Dragon, which has been conferred upon him by the Emperor of China in recognition of valuable services rendered.

WE published last week a paper by Dr. James McIntosh and Mr. Paul Fildes on the Theory and Practice of the Treatment of Syphilis with "606." The paper had the following subtitle: "From the Bacteriological Laboratory, London Hospital—Dr. W. Bulloch" (as given in the contents page of THE LANCET). By a mistake Dr. W. Bulloch's name was omitted from the footnote to the paper in the body of the journal.

STERILISATION OF WATER ON A LARGE SCALE BY MEANS OF ULTRA-VIOLET RAYS.

Methods of Industrial Water Sterilisation.

THERE are two problems of industrial water sterilisation. The first one consists of obtaining water perfectly free from germs—that is to say, absolutely sterile. The second problem is that of obtaining water which is good for public distribution as drinking water, which does not present any danger of acting as propagator for infectious maladies which, according to modern hygienic theories, are likely to be spread by certain microbes living in the water. Typhoid fever and cholera, which are supposed to be propagated by water, may be mentioned particularly.

The former problem—that of obtaining absolutely sterile water—presents itself chiefly in its application in medical practice, surgery, gynæcology, &c. This problem has been commonly solved in the following manner: 1. Heating the water to high temperature during a considerable period, in some cases even under high pressure. 2. Adding to the water chemical products, such as carbolic acid, and during later years treatment with ozone.

The latter problem—namely, that of producing a drinking water for public distribution which will not propagate maladies—has been most commonly solved by more or less frequent filtrations of the water through sand filter-beds of various density. These filtration plants keep back most of the microbes, and give a relative security to the inhabitants of a town where such system is used. Another process has been frequently advocated in the last few years—viz., adding to the water certain chemical products, such as salts which form precipitates; chlorine, which in itself is a strong bactericidal product; or oxidising agents, the principal of which has been ozone.

Filtering plants have had a very wide application in all countries; there are, however, a number of important disadvantages to their use. The first cost of such a system is very high, owing to the large area necessary on account of the slow speed at which the filtration must be carried on in order to be effective. Even under these conditions the action is not absolutely certain. The systems which advocate the addition of chemicals for sterilising or, to be more accurate, for disinfecting water, have not had general approval, due largely to the aversion of the public to anything being added to drinking water.

Sterilisation by the ozone process has been tried on a very large scale in different cities; nevertheless only a few installations have been made. One of the disadvantages of this system is the disagreeable taste which ozone gives to the water, and which only disappears after the water has been standing for a considerable time. Another objection lies in the difficulty of producing ozone without at the same time producing nitrous acids, the presence of which absolutely condemns water for drinking purposes. The first cost of the ozonising plants is extremely high, while, on account of the intelligent attention required, subsequent supervision is costly.

All these different processes, whether for dealing with small or large quantities of water, have found a very serious competitor in the methods of treatment employing ultra-violet rays, it having been demonstrated that sterilisation by means of ultra-violet rays is not only safer than by any other method, but is also infinitely simpler and cheaper.

Production of Ultra-violet Rays.

The physicist has known the ultra-violet rays for a long time; he produced them in his laboratory by different methods, principally the carbon bisulphide lamp or the arc between metal electrodes. The first ultra-violet rays which were produced industrially were in the apparatus of Professor Finsen for the treatment of lupus and other maladies, Finsen using for his purpose the arc between metal electrodes, or a series of discharge gaps constructed of iron or other metal. These sources of ultra-violet rays are, however, complicated, and have scarcely found application for other purposes than for those indicated by Finsen himself.

The quartz mercury vapour lamp, however, represents the first really convenient source of ultra-violet rays, this lamp being similar to Finsen's, in so far that the electric arc is produced between metal electrodes, these in this instance being mercury. This mercury arc has been studied particularly by Arons and by the American engineer, P. Cooper Hewitt, the latter's work resulting in the development of the well-known Cooper Hewitt lamp, which consists of a long tube, and has been largely applied for general illumination and photographic purposes.

An advance was made in the design of mercury vapour lamps when Schattner and Kuech enclosed the mercury arc in tubes of fused rock crystal whereby they obtained a very strong source of ultra-violet rays. The presence of these rays was, however, a disadvantage for an illuminating lamp, the rays themselves being injurious to the eyes. The tube of the Cooper Hewitt lamp is manufactured of glass, which is a complete absorbent of the ultra-violet rays, these being produced in the interior of the tube. It is on this account that the light obtained from these lamps is in no way harmful.

Quartz mercury vapour tubes were first applied exclusively to illuminating lamps, it being well understood that the tubes were enclosed in glass globes so as to protect the public against the enormous quantity of ultra-violet rays which passes through the fused rock crystal, of which the tubes themselves are made. Such quartz mercury vapour lamps are being made at the present time by the Westinghouse Cooper Hewitt Company in London and Paris, and by the Quartzlampen Gesellschaft in Hanau. The former company has studied jointly with Messrs. von Recklinghausen, Henri, and Helbronner the application of this mercury vapour lamp (known as the Westinghouse silica lamp) to other than illuminating purposes. These studies began with the particular application of the ultra-violet rays to the sterilisation of milk and water. This work has since been taken up in a good many other laboratories, it now being a question of almost general knowledge that dangerous microbes contained in water are killed with quite remarkable speed by the means of the ultra-violet rays emitted.

Water Sterilising Apparatus by Means of Ultra-violet Rays.

The work done in this matter has enabled the Westinghouse Cooper Hewitt Company to produce water sterilising apparatus for different applications. The first apparatus, which provided a continuous supply of sterile water at the rate of 132 gallons per hour, was referred to in THE LANCET of April 2nd (p. 937) and May 14th (p. 1390), 1910, under the heading of "Practical Sterilisation by Means of Ultra-Violet Rays," and need not be again referred to.

It may, however, be mentioned that another apparatus, producing about the same quantity of sterilised water, has been put on the market. This, however, operates on a different system, in so far that the lamp is submerged, it being claimed that a greater number of the rays emitted by the lamp are utilised for the purpose of sterilisation. It must, however, be borne in mind that the normal working of the lamp is seriously modified by the chilling effect of the water, on account of which there is an infinitely lower production of rays that is not at all compensated by the better utilisation of those which are produced. The chief disadvantage, however, is that the luminous tube becomes gradually coated with scale from the salts contained in the water, which scale renders opaque the otherwise transparent tube and prevents the ultra-violet rays from entering the water, in consequence of which sterilisation is arrested.

The sterilisation of large quantities of drinking water for public water distribution has been the object of numerous tests, in which well-known investigators have been interested.[1] Experiments to test the efficiency of the apparatus for this purpose were made by artificially polluting the water which entered the apparatus, the lamps being suspended above the water, maintained at a short distance from the surface by means of floats. These experiments also showed in a striking manner the importance of having the water violently agitated, and this experience has been used in the construction of new apparatus. These early experiments showed that

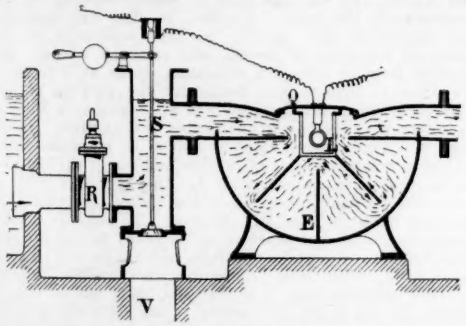
[1] See Comptes Rendus de l'Académie des Sciences, April 11th, 1910. Stérilisation de Grandes Quantités d'Eau par les Rayons Ultra-violets. Note de MM. Victor Henri, André Helbronner, et Max de Recklinghausen. Note presentée par M. Dastre à l'Académie des Sciences (these experiments based on early researches at the Sorbonne University). Cernovodeanu and Victor Henri, Comptes Rendus, Jan. 3rd, 1910.

sufficient sterilisation of drinking water could be obtained with a maximum expense of 36 watt hours per cubic metre.

In carrying out their experiments Messrs. M. Henri, Helbronner, and Recklinghausen tried to increase the bactericidal action by utilising a larger number of the ultra-violet rays generated than is possible where the lamp is merely suspended above the surface of the water. It is, however, highly important that the lamp should burn in a normal manner—that is, under the same conditions as to temperature, &c.—as in illuminating outfits, in which case the light efficiency of the lamp can be checked by testing the current and voltage. For the efficient operation of the quartz lamp it is necessary that the luminous tube should be at a high temperature (about 800° C.) If the lamp is artificially cooled, either wholly or in part, as is the case when it is submerged in running water, this high temperature cannot be obtained, and the light efficiency of the lamp is seriously reduced. It may be mentioned that the lamp for 110 volt circuit, such as we have in the small Westinghouse steriliser already described, should be adjusted to 75 volts across the tube, and in the case of the 220-volt lamp, 150 volts across the tube. The normal current of $3\frac{1}{2}$ and 3 ampères respectively is obtained after 15 minutes' running; the efficiency is then at the maximum. In all Westinghouse steriliser outfits the quartz lamps run under conditions corresponding to those in ordinary illuminating outfits, consequently at their highest efficiency.

In dealing with water sterilisation on the industrial scale, the Westinghouse Cooper Hewitt Company, Limited, have thought it desirable to develop a single unit, one or several of which may be set up according to the quantity of water demanded. This unit will sterilise at least 600 cubic metres (132,000 gallons) in 24 hours, and is as already mentioned, fitted with one 3 ampère 220 volt lamp.

The unit consists essentially of three parts—viz., the special cast-iron chamber (E in figure), in which the water



comes under the influence of the ultra-violet rays; the special box with cut rock-crystal windows, into which the lamp is fitted; and the special automatic deviating valve, which ensures that no water shall pass through the sterilising chamber at such time as the lamp is not in operation. The chamber (E) through which the water passes is fitted with several baffles for directing the flow. These serve the purpose of thoroughly stirring up the water, which, as already pointed out, is necessary for the proper treatment and brings the full quantity of water under the direct influence of the light on three distinct occasions. The lamp-box (I) makes a water-tight joint with the containing vessel (E), being held in position by means of four bolts with wing nuts (O); the box itself forms an obstacle in the path of the water. The three sides of this box in the path of the water are fitted with windows of cut rock crystal which provide free passage to the ultra-violet rays emitted by the lamp, through which they pass into the water flowing in the chamber. The deviation valve (V) is placed between the supply and the steriliser apparatus, and consists of a double T-piece fitted with a mushroom valve at the lower end, this valve being held closed by means of a solenoid (S) energised by the current flowing in the sterilising lamp. Should the current be cut off for any purpose this valve would be immediately opened and the water would cease to pass through the sterilising chamber. This automatic deviating valve can readily be fitted with a bell or luminous signal, so as to attract the attention of the inspector of the plant.

On entering the apparatus the water passes through the supply valve (R) and over the deviating valve (V) into the chamber (E). The flow is directed against the first window of the box (I) by means of a baffle, is then sent to the periphery of the chamber and back again to the second or horizontal window; thence it passes back to the periphery of the chamber round a further baffle to the third window, thus coming under the direct influence of the ultra-violet rays on three distinct occasions. In the event of the lamp not being in operation, the deviating valve (V) would be open, through which the water would pass. In this way it is assured that nothing but sterilised water can be distributed to mains.

The Westinghouse steriliser of this type (although in a somewhat less perfected form) has been in service for a considerable time at the Competitive Exhibition for Sterilising Apparatus at Marseilles. The following table shows the results of a few of the tests which have been made with this apparatus:—

Results of Tests with Water Exposed to Ultra violet Rays.

Experiment No.	Cubic metres water per 24 hours.	Watt hours per cubic metre.	Before steriliser.			After steriliser.		
			B. coli per litre.	Germs per cubic centimetre.	Mould per cubic centimetre.	B. coli per litre.	Germs per cubic centimetre.	Mould per cubic centimetre.
1	More than 600	Less than 26	—	158 174 148	—	—	0 2 2 0 0	8
4	Do.	Do.	100 to 200	220 260	—	0	2 2	—
7	Do.	Do.	—	22 18	2	—	0 4 0 0	2 10
10a	Do.	Do.	500	36 36 40	2	0	0 0	3
12a	560	28	80	22 20 18 24 16	—	0	0 0 0 0 0·5 0 0	3 1·5
12b	More than 600	Less than 26	50	48 52 44	2	0	0 0 0 0 0 0 0	6
13	Do.	Do.	50	24 30 14	—	0	0 2 6 0	—
14	Do.	Do.	200	30 38 20	—	—	10 6 0 4 1	2
18	Do.	Do.	500 to 1000	43 60	—	0	0 0 0 0 0 1	—

From this table it will be noted that the quantity of water passed through the apparatus was in nearly every case more than 600 cubic metres per 24 hours. At certain periods of the tests an even greater flow of water was available, and even under these conditions the bacteriological results were no less satisfactory than those cited above. This table shows that the water leaving the apparatus was in the majority of

cases sterile—that is, showed an entire absence of germs—and in no case did tests reveal more than 10 germs per cubic centimetre; on no occasion even when testing with 200 cubic centimetres were any B. coli found. The water which has been treated in apparatus of this description can therefore be safely classified amongst the "perfect" waters, according to Miquel's definition, whilst the water which was fed into the apparatus could scarcely be called potable, it being far too rich in B. coli.

The presence in some cases of a greater quantity of mould in the water after passing through the apparatus is due to the lack of protection of the opening from which the test-water was drawn, whereas the valve between the supply and the apparatus was well protected against dust and wind. The water with which the apparatus was fed during the Marseilles tests was clarified by the installation of roughing filters and prefilters of the system "Puech and Chaball, Paris." The installation produced a perfectly clear water from the very muddy supply of the river Durance. This water was in most cases quite opaque, even through a column 1 metre long.

The above tests, carried out by independent authority, have clearly demonstrated the possibility of producing perfect drinking water for public distribution with consumption of 26 watt hours per cubic metre, single apparatus being capable of dealing with fully 600 cubic metres in 24 hours. In view of the extreme simplicity of the apparatus and this low power consumption, it would appear that there is a wide future for this new system of sterilisation.

THE CORONERS' LAW AND DEATH CERTIFICATION (AMENDMENT) BILL.

THE procedure by which in this country deaths from unnatural or unknown causes are investigated has, it is notorious, given rise to much dissatisfaction. Complaints and criticisms extending over several years were ultimately brought to a head and the various authorities concerned have held inquiries and have proposed schemes of reform. It seems likely that in the near future these proposals will constitute the basis of legislation, and it is therefore of importance that the medical profession should scrutinise them closely, and, if required, should exercise its influence in such a way as to ensure that the community shall receive the full benefit of medical knowledge as it exists at the present day.

We may briefly recapitulate the steps which have been taken during recent years. In October, 1906, the London County Council passed a series of resolutions suggesting amendments in the laws relating to death certification and coroners' inquests. In 1908 a Departmental Committee was appointed by the Home Office to inquire into the law relating to coroners and coroners' inquests, and in December, 1909, this committee issued a report containing a number of recommendations.[1] In April of this year Sir William Collins introduced a Bill in the House of Commons "to amend the Law relating to Coroners' Law and the Certification and Registration of Deaths and Burial." Recently the London County Council (on which body there is at present not a single medical man) passed a further series of resolutions dealing with coroners' affairs, and resolved, subject to certain amendments, to support Sir William Collins's Bill, and to urge the Lord Chancellor and the Home Secretary to secure facilities for the early passing of the Bill. Sir William Collins's Bill—amended possibly in certain particulars—may therefore be the basis of forthcoming legislation, whatever the whirligig of politics may bring about in the next few days, and it is accordingly the provisions of this Bill that should be examined.

The Bill has already aroused strong opposition owing to the proposal it contains to make it obligatory for a medical practitioner personally to inspect a body before giving a certificate of death, but without making any provision for the payment of a fee. For the moment, however, we wish to confine our remarks to the clauses dealing with coroners, which have not yet received, we think, the attention from the medical profession their importance deserves. The Bill does not by any means follow the recommendations of the Departmental Committee, and in this matter we are bound to observe that, while fully recognising the high abilities and great experience of Sir William Collins, we are not aware that he has had an experience of the coroners' courts so large as to justify his setting aside recommendations arrived at by the committee after prolonged inquiry. The Departmental Committee, for instance, found that there was justifiable dissatisfaction in the medical profession with the scale of fees in the coroners' court and with their mode of allocation, and recommended a new scale. It also advised that medical officers of institutions in which deaths occurred should no longer be deprived of their fees. Neither of these recommendations finds a place in the Bill.

It is, however, Clause 5 of Sir William Collins's Bill which calls for the most urgent criticism. This runs as follows:—

> No person shall be appointed a coroner unless he be a practising barrister of not less than five years' standing, or a solicitor of not less than five years' standing, or a registered medical practitioner who is also a barrister or a graduate in law of a University in the United Kingdom.

A proposal which seeks to place the medical man at a disadvantage, as compared with a member of the legal professions, in a matter admittedly closely pertaining to medicine, requires strong reasons for its justification, and it becomes necessary to review the functions which are discharged by the coroner, and to determine his sphere of usefulness in order to ascertain whether any such reasons do, as a matter of fact, exist.

The office of King's coroner affords an instance of an institution which, created many centuries ago for a specific purpose, has gradually undergone a complete change of function, but without having satisfactorily adapted itself to that change of function. The coroner dates back at least to the twelfth century, and was originally a revenue officer of the Crown. It was his duty to take possession of the revenues of the king. He had to find out criminals and confiscate their goods; to take possession in the name of the King of wrecks and stranded whales; and to seize treasure trove, an obligation which still remains. He came to inquire into deaths for the purpose of discovering whether the deceased was an outlaw or a suicide, as in that case his property escheated to the Crown. In the case of a death caused by some animal or inanimate thing he had to assess the value of the deodand which was forfeited to the Crown as compensation for the loss of a subject. Otherwise he had no interest in the matter, for pathology and vital statistics were still to come. As security against appropriation of the revenues so collected he had to own land "in fee sufficient," a condition which must still be complied with. This close connexion with judicial matters probably explains how it is that the office has so largely fallen into the hands of lawyers. But with the gradual evolution of society the character of the duties of the coroner changed. Escheat disappeared, revenues were collected by other officers, deodands were abolished by statute in 1846, and the holding of inquests on Royal fish or wrecks was expressly excluded by the Coroners Act of 1887. At the same time other reasons for inquiring into deaths came into existence. Accurate scientific information was required for the purpose of the Registrar-General's annual returns, for legislation connected with public health, industrial poisoning, food poisoning, infant mortality, factories, insurance, compensation, and many other matters of the highest public importance. The advantage in having a medical man to inquire into deaths from unnatural or unknown causes was to some extent recognised, and thus it has come about that in recent years the medical man has partly displaced the lawyer in the office of coroner, though the majority of coronerships in England and Wales are still held by solicitors.

A coroner is by 50 and 51 Vict., Ch. 71, required to hold an inquest where there is reasonable cause to suspect that a person has died a violent or unnatural death, or where there is a sudden death from causes unknown. Inasmuch as only cases possessing some sensational interest are regularly reported in the public press, considerable misapprehension exists among those not familiar with the coroner's court as to the character of the bulk of the work which is performed therein. Murders and manslaughters are reported in full, and as a result appear to form a much larger proportion of a coroner's inquiries than is

[1] THE LANCET, August 21st (p. 557), 1909, and April 2nd (p. 942) and 9th (p. 1009), 1910.

actually the case. Out of 37,092 inquests held in England and Wales in 1908 there were only 291 verdicts of murder and manslaughter together, or less than 0·8 per cent. The total number of persons actually tried for murder was only 67. It is generally believed that the coroner plays an important part in aiding the detection of these crimes, but his value in this respect is probably over-estimated. Whenever there is reason to suspect that crime has been committed, thorough and independent investigation is always made by the police, and indeed the coroner's own inquiries are usually made by the police, inquests being frequently adjourned in order to give them time to finish their investigations. The magistrate's inquiry is quite independent of the inquest, and if he commits for trial the facts are again recited before the higher tribunal. Recent events have furnished a striking illustration of the cumbersomeness of our procedure in requiring two preliminary inquiries before trial in cases of murder, with the consequent additional expense to the State and inconvenience to witnesses, counsel, and others concerned, who are required to make afresh statements already fully examined under oath at another court. There can be little doubt that the coroner's jurisdiction in this respect might be dispensed with, without detriment to the community.

On the other hand, the deaths of infants or children from such causes as inattention at birth, malnutrition, overlying, neglect, exposure, improper feeding, want of medical treatment, &c., although enormously more numerous, attract but little attention in the public press, and their frequency is seldom realised, yet out of the 37,092 inquests held in England and Wales in 1908, no less than 9935 were upon the bodies of children under seven years of age. This figure, of course, includes "natural deaths," but in a large proportion of so-called natural deaths conditions of neglect or ignorance are antecedent causes, though juries are loath to find so except in flagrant cases. It is in inquiries of this nature that the coroner has the greatest opportunity of performing public service. Neighbours are usually present, and any remarks he may make are repeated outside to a wider circle than those actually present in court. Thus his court may be made a centre for distributing knowledge among the ignorant poor. Whether it be in reference to medical treatment, suitable clothing, overlying, breast-feeding, or other kindred matters, a coroner can exercise a valuable influence tending to the decrease of infant and child mortality, though most of this highly desirable work passes unreported and almost unnoticed; not entirely unnoticed, however, for the influence of the coroner can be traced in more than one clause of the Children Act of 1908. There is, of course, no legal obligation upon a coroner to undertake these duties, but most of the medical coroners do act in this way, and everyone will admit the desirability of such action. The point does not need labouring that the intimate knowledge of child life and health requisite for this purpose is far more likely to be found in the medical man than in the lawyer.

Another direction in which coroners' inquests are, or should be, of great value is in the obtaining of accurate information for the purpose of the Registrar-General's annual returns. It must be remembered that not only are the cases which come before him involved, but that the attitude of the coroner will have an effect upon the certificates of all the medical practitioners in his district. Here, again, the medical man must necessarily have an advantage. It is not often nowadays that a verdict so remarkable as that quoted by the Select Committee of 1893 is recorded—viz., that "Deceased died from stone in the kidney, which stone he swallowed when lying on a gravel path in a state of drunkenness," though many verdicts of but little greater scientific value are still recorded by non-medical coroners. In a quite recent inquest on a person who had died with an effusion of blood from the mouth, the medical witness, in the absence of a post-mortem examination, declined to express an opinion as to the cause of death. Pressed to answer the question, he still adhered to his attitude. The coroner then turned to the jury and told them that although he was not a medical man he had had 30 years' experience, and he would inform them of the cause of death. It was rupture of a blood-vessel, and a verdict to that effect was accordingly returned. It might be said that the lawyer coroner can supply his deficiencies from the medical evidence placed before him. But it is clear that he must have medical knowledge to appreciate that evidence and to examine the witness upon it. He must also be able to distinguish essential from non-essential. At present the non-medical coroner is too apt to attach undue importance to such terms as "coma" or "syncope." "Convulsions" figures largely as a cause of death in the coroners' courts, although the term is one the use of which is expressly deprecated by the Registrar-General.

On behalf of the lawyer's claim to coronerships it has been urged rightly that his knowledge of law is of value, and that he has had experience of the laws and method of taking evidence. We think, however, that it is easier for a medical man to acquire in a short space of time the necessary knowledge of law than it is for the lawyer to acquire the medical knowledge without going through the usual hospital training.

One point more must be considered. Sir William Collins's Bill provides that a coroner may order a post-mortem examination to be made, and if he is satisfied in this way that death was due to natural causes he need not hold an inquest. This is a desirable reform in the present procedure, but seems to render it more imperative that the coroner should be a medical man. The interpretation and assessment at its proper value of a medical report is often a difficult matter, and to leave it in the hands of a layman may be a highly dangerous experiment. In his preliminary inquiries a coroner has no power to compel answers to questions, or to summon witnesses, or to examine them on oath. He must act on his own unassisted judgment. In 1908 there were 19,054 preliminary inquiries which were not followed by inquests, and there were 14,184 inquests in which verdicts of natural death were found. In every one of these cases the medical statement or evidence was presumably the determining factor, and yet the bulk of them were probably investigated by men who had never seen a post-mortem examination made.

If, instead of having existed from the twelfth century, we could imagine coroners now being created for the first time, it is probable that we should never think of appointing anyone but a medical man to inquire into a matter so essentially medical as the cause of death, though he would most likely be required to have had special experience, just as at the present moment the public health service is in the hands of medical men but with special experience. Nor is the cause of death the only medical matter which may be at issue: the whole domain of medicine may come under review in the coroner's court. The coroner should be capable of understanding and properly weighing evidence as to whether an infant was born alive or not, and whether it was mature or not. He may have to determine whether an operation was justified, and whether it was efficiently performed. He may be called upon to decide whether certain medical treatment was appropriate, or whether an anæsthetic was administered with due precautions. He must have a knowledge of the effects of poisons. He must be familiar with the symptoms and results of all forms of insanity. Medical evidence will be given before him on such matters and he has to interpret it to a jury.

It is only custom which has blinded us to the anomaly of a lawyer holding these inquiries. The office is essentially of a medical character. Sir William Collins's Bill contains much that is of value, and we trust it may be found possible to delete or modify the unsatisfactory provisions before it becomes law.

THE WATER-SUPPLY TO SOUTHEND.

TWENTY-FIVE years ago Southend had a resident population of 10,000 or 12,000; to-day its 60,000 permanent inhabitants are annually increased by a like number of summer visitors, the average consumption of water for all purposes being 32 gallons per head. Such a rapid increase of population in a district so unfavourably placed geologically for obtaining a pure and abundant water-supply is probably unequalled in the United Kingdom. A glance at a geological map shows that the great mass of the London clay covers the entire district to a depth of from 300 to 500 feet, with the exception of Grays and Purfleet. Beneath the clay are the lower London tertiaries of varying depth with the Thanet sands resting on the chalk, which is the principal water reservoir for South-East England. The rain falling

on any part of Essex south of a line drawn from Colchester, through Chelmsford, to Buntingford, drains off through natural surface channels, and is unavailable as the source of a large supply, though, of course, numbers of shallow wells sunk in pockets of gravel occur locally. Only rain falling north of this line, or where the chalk outcrops at Grays and Purfleet is available for Southend, and must travel long distances through the chalk.

At Grays and Purfleet water is obtainable in abundance, its character agreeing exactly with that obtained from the chalk on the south side of the Thames. The chalk, however, descends rapidly on all sides save the south, since at very short distances from the outcrop the chalk lies at a depth of 300 feet. The only water obtainable in this district is from the chalk or the overlying Thanet sands. The chalk is very compact and free from fissures, and does not yield water readily, and the Thanet sands are of so fine a texture that unless the pumping is comparatively slow sand comes up with the water and is a source of serious trouble. Some of the beds lying between the base of the London clay and the upper surface of the chalk yield water, limited in amount, but often of a very objectionable character in consequence of its containing large quantities of magnesium and calcium sulphates, which render it excessively hard and quite useless for drinking or any other domestic purpose. In sinking wells in the locality this water has to be effectually stopped out or the whole yield is rendered unusable.

Notwithstanding these difficulties, the water company which supplies the borough of Southend, the urban district of Leigh, and portions of the adjoining rural districts, has always provided an abundant supply of water to the rapidly increasing population. At first Southend alone was supplied from two borings nearly 900 feet deep situated in the parish, but as the population increased more and more wells were sunk, two or three miles apart, until they now number 21 and extend to Billericay, some 20 miles away. At the same time, the area of supply was extended so as to include parishes in which the wells were situated and others along the route of the mains. These wells vary in depth from 300 to 900 feet, and whether the water is drawn from the Thanet sands or from the chalk it is identical in character. It is very soft, and of the highest degree of organic purity. The last well sunk yielded water containing the constituents as under :—

	Grains per gallon.
Calcium carbonate	1·2
Magnesium carbonate...	0·4
Sodium carbonate	21·0
Sodium sulphate	9·1
Sodium chloride	22·7
Silica, &c.	0·9
Total ...	55·3

This analysis has been confirmed in THE LANCET laboratory, and in an experiment in which a strip of lead was placed in the water there was no action. This may be taken as typical of the water from the majority of the wells, though some contain a little more calcium salts. All the wells yield a very pure slightly alkaline saline water, of the kind which when it is found on the Continent is charged with carbonic acid gas, bottled and sent over here as a table water, and lauded for its virtues and for its purity. There is no doubt that water of this character, containing very little lime salts and a little sodium carbonate and chloride, is very palatable and very wholesome.

Only limited areas are supplied from any one well. The rising mains deliver into one of two very large covered storage reservoirs situated on commanding eminences, and these reservoirs supply by gravitation the various service reservoirs placed near the centres of population. Pollution of water derived from such sources and distributed in this manner may be said to be impossible, the supply being constant and not intercepted by domestic storage cisterns, which are a frequent source of danger. Every well is sunk through some 300 to 400 feet of London clay, which is of the most impervious character, and is lined throughout the sunk portion with iron cylinders above and brickwork set in cement below, and with the exception of one or two of the older wells all are in the open country, far from any habitations. Samples from three different parts of the district are submitted quarterly to chemical and bacteriological examinations by Dr. J. C. Thresh at the London Hospital, and once a year all the wells are examined and samples from each submitted to bacteriological examination.

Every care is therefore taken to provide Southend with a water absolutely beyond suspicion, and the rapid increase in population, as well as the natural disadvantages of site, have been perfectly met. These things give a medical interest to the matter.

REPORT OF THE PUNJAB PLAGUE COMMITTEE, 1910.

A COMMITTEE appointed by Sir Louis Dane, K.C.S.I., Lieutenant-Governor of the Punjab, to inquire into the utility of the present anti-plague policy and to report on the best means in the light of recent knowledge and experience of increasing its efficacy, assembled recently at Simla. The composition of the committee was as follows :—President : The Honourable Mr. A. Meredith, Indian Civil Service. Members : Colonel C. J. Bamber, I.M.S., Inspector-General of Civil Hospitals in the Punjab ; Lieutenant-Colonel C. P. Egerton, Indian Army ; Major E. Wilkinson, I.M.S., Sanitary Commissioner of the Punjab ; Mr. C. M. King, Indian Civil Service ; and Captain C. A. Gill, I.M.S., Chief Plague Medical Officer of the Punjab. This committee has issued a most important and interesting report which is particularly opportune in that the question of rat destruction and plague prophylaxis generally has been before the medical profession in this country recently owing to the detection of plague-infected rats in certain parts of East Anglia and other places.

Results of Anti-plague Measures.

In the Punjab Province during the past three years (1906–1909), at an expenditure of over £147,235, an active prophylactic campaign has been waged against plague. One of the main objects of the committee has been to ascertain whether the results of this heavy outlay have been commensurate with the expenditure incurred. They, however, find it a matter of some difficulty to pronounce a definite opinion on the question, and before doing so they place on record two main facts which the evidence before them clearly established : (1) that plague preventive measures have been the means of saving a vast amount of life ; and (2) that the natives of India look to Government, not only to aid them, but to take the initiative in maintaining the struggle against plague.

It has also been brought home to the committee, particularly by the evidence of Indian witnesses, that the measures which have been adopted with the object of suppressing plague have induced a desire for sanitary reform on the part of all classes of the population. In addition, the plague staff have performed useful service in administering medical relief in rural areas and they have also been of assistance in fighting epidemics of cholera and malaria. Last, but not least, the constant tours of the medical officers on plague duty in infected tracts have furnished the natives of India with a tangible proof of the solicitude taken by the Government in their welfare. On these grounds alone many of the witnesses examined were of opinion that the expenditure incurred by Government in furtherance of anti-plague measures was amply justified, and the committee fully endorse the views of those who consider that the cessation of anti-plague operations would be viewed with dismay and might possibly give rise to a feeling of discontent. They therefore think that, in view of the state of plague in the Punjab and the small likelihood of its amelioration in the near future, considerable expenditure will still be necessary. Postulating this, the committee appear to have carefully scrutinised the various preventive measures that are at present being employed, and they embody certain conclusions and recommendations in a thorough and able report, drawn up by Captain C. A. Gill, I.M.S., chief plague medical officer of the Punjab, who acted as secretary of the committee.

Recommendations and Conclusions of the Committee.

The chief recommendations and conclusions may be briefly stated as follows :—

General policy.—An active anti-plague policy on the part of Government is not only necessary but should be continued.

Rat destruction.—The destruction of rats in Punjab villages by means of poison for the purpose of preventing plague epidemics not being attended with success should be

abandoned on a large scale. Systematic trapping with traps (in the ratio of 2 per cent. of population) does not reduce the rats of Punjab towns and villages sufficiently to prevent plague epidemics. To diminish adequately the rat infestation of towns and villages by means of systematic trapping presents difficulties of such a magnitude as to render it an impracticable policy on a large scale. The destruction of rats by means of poisoning and trapping on the present lines does not yield results commensurate with the expenditure incurred, and it should be discontinued. The greatest prospects of success in preventing the spread of plague by means of rat destruction consist in attacking the comparatively few localities where plague persists during the quiescent period.

Anti-plague inoculation.—Anti-plague inoculation is essentially a personal prophylactic measure. and in recommending its adoption everything savouring of compulsion or pressure should be carefully avoided. During severe epidemics of plague regimental medical officers might with advantage be temporarily employed as inoculating officers in the recruiting area of their regiments.

Village sanitation.—For dealing with plague epidemics in villages, evacuation is a most important anti-plague measure, and means are suggested in the report to facilitate its more widespread adoption. Measures directed towards improving village sanitation and domestic hygiene are of the utmost importance, and efforts should be made to give effect to such simple measures of this nature as public opinion may endorse. The erection of model houses at the headquarters of districts, the removal where possible of manure from close proximity to village sites, and an increased conservancy staff for villages are desirable measures.

Disinfection.—The disinfection of infected houses during the course of an epidemic or after its cessation is not ordinarily necessary. Disinfection as applied to the clothing and baggage of persons coming from infected areas is a valuable means of preventing the spread of plague into non-infected areas and should be carried out whenever possible. The only measures of a compulsory nature which are permissible are those demanded by public opinion and capable of being put into operation by the people themselves.

Quarantine.—Certain measures to facilitate quarantine, isolation, and refusal of access in the case of villages should be adopted. The extension to the inhabitants of towns as well as villages of legal powers to prevent the access of persons coming from infective areas is recommended. The power possessed by Commissioners of prohibiting fairs in infective localities should be more freely exercised.

Reports.—An efficient system of intelligence whereby the presence of plague is rapidly reported is of the utmost importance. Certain alterations are suggested with a view to accelerating the receipt of infection reports by civil surgeons. The present procedure in regard to the reporting of plague occurrence should be cancelled and regulations practically identical with those already in force dealing with cholera should be substituted.

Finance.—Substantial money rewards should be offered for information regarding plague occurrence during the hot weather. The organisation and training of a lay agency are most important measures, and honorary plague officers should be appointed in all districts subject to infection. The submission by Commissioners to the Inspector-General of Civil Hospitals, Punjab, of a quarterly return showing the grants-in-aid made to local bodies from provincial funds is necessary. Rat destruction operations on the limited scale recommended by the committee should be a charge on provincial funds. Plague officers should be invited to attend the budget meetings of district boards. Certain proposals in regard to the various details connected with district organisation and administration are also embodied; these, however, call for no special remarks.

From this report it appears that with regard to preventive measures opinions as to what is best have undergone considerable changes. On the advice tendered by the committee the Punjab Government have decided to give up *general* rat destruction, but to continue it in *circumscribed areas* where the disease persists in the quiescent period (viz., during the summer months), which form foci for its distribution later in the year. On the question of disinfection the committee in making the following dogmatic statement are bound to invite criticism; they say: "In the light of recent knowledge it is clear that disinfection, either by heat, chemicals, or poisonous gases, can rarely be relied on to destroy permanently the infectivity of rooms and dwellings. The committee desire to emphasise this point, as they observe that not only is disinfection in some form or other popular with the people, but in some cases district officials have lent their authority to encourage its adoption on a large scale. It may therefore be mentioned that ordinarily the only procedure of this nature that is called for in plague-infected villages is the admission of light and air into infected houses and the exposure of their contents to the direct rays of the sun."

From a financial point of view this and the other recommendations already enumerated appear to foreshadow a reduction in the cost of anti-plague measures in the Punjab. And it is encouraging to note that the question of sanitary conservancy is to be taken up more fully in villages and that responsible sanitary officials will be placed in charge of rural areas.

THE CHOLERA EPIDEMIC.

(BY THE BRITISH DELEGATE ON THE CONSTANTINOPLE BOARD OF HEALTH.)

Cholera in Russia.

THE epidemic in Russia continues to decline. The following figures are in continuation of those published in my last letter (which appeared in THE LANCET of Nov. 19th, p. 1507):—

Week ending Sept.	11th	...	3878	cases,	2004	deaths.
,,	,,	,,	18th	...	2919	,,	1529	,,
,,	,,	,,	25th	...	2089	,,	1121	,,
,,	,,	Oct.	2nd	...	1022	,,	584	,,
,,	,,	,,	9th	...	823	,,	383	,,

The above are all "corrected" figures. For the succeeding three weeks only "uncorrected" figures are as yet available. They are as follows:—

Week ending Oct.	16th	...	449	cases,	279	deaths.
,,	,,	,,	23rd	...	170	,,	110	,,
,,	,,	,,	30th	...	85	,,	35	,,

(The above dates are all according to the Old Style.)

The disease still lingers principally in St. Petersburg, in the valley of the Volga, in Central Asia, and Siberia. It has appeared at Vladivostok and in the Amur and Primorskaia (or maritime) provinces, on the Pacific coast. In the last named there were 196 cases and 76 deaths in the week ending Oct. 9th, 149 cases and 140 deaths in the next week, and 25 cases and 29 deaths in the week ending Oct. 23rd (Nov. 5th). These are "uncorrected" figures. The *Vratch* continues to publish week by week observations on the St. Petersburg water-supply. Of these, the following may be quoted. Of 24 samples of unfiltered water taken at the waterworks between August 30th and Sept. 2nd (Old Style), 10, or 42 per cent., contained the cholera vibrio; and of 64 samples of filtered water taken the same days 11, or 17 per cent., were also found contaminated. Out of 30 samples of water taken direct from the Neva, near its left bank, the cholera vibrio was found in no less than 22, or 73 per cent. In later observations the percentage of infected samples greatly diminished; and out of 14 samples of unfiltered water taken on Oct. 7th and 8th only 1 was found infected, while out of 34 of filtered water also only one contained the cholera bacillus. A serious outbreak of the disease occurred in October in the staff of the Penteleimon Lunatic Asylum in St. Petersburg; in the course of a few days there were as many as 41 cases of the disease here.

Cholera in Germany.

In the week ending Oct. 23rd 10 fresh cases of cholera were recorded, and on the 24th the whole German Empire was declared cholera free.

Cholera in Austria.

On Oct. 17th an imported case of cholera occurred at Trieste; the patient had left Rutigliani (near Bari), in Italy, on the 5th, had stopped seven days in Venice, and arrived in Trieste on the 13th; he was arrested as the result of a street fight, and developed symptoms of cholera in the night of the 14th–15th—i.e., nine days after he had left the infected area

in Italy. In the night of the 23-24th a child, aged 11, son of the "contrôleur" of the above prison, fell ill with cholera, and the diagnosis was confirmed bacteriologically. No other cases have occurred recently in Austria.

Cholera in Hungary.

In the week ending Oct. 22nd 28 cases and 14 deaths were recorded in 16 different places, situated in the counties of Bacs-Bodrog, Baranya, Tolna, Esztergom, Temes, and Torontal. In the week ending Oct. 29th 6 cases and 6 deaths occurred in seven different places situated in the first three of the above counties. On Oct. 21st the Hungarian Ministry of the Interior announced that the communes of Czrepaja and Klekk, in the county of Torontal, were declared "foyers de choléra"; in the former 17 cases had occurred between Sept. 22nd and Oct. 18th; and in a workman's colony at a sluice on the river 4 kilometres from Klekk 15 cases had occurred before Oct. 18th.

Cholera in Italy.

Complete information as to the recent behaviour of the epidemic in Italy has not been received here. For the week ending Oct. 26th the figures are wanting; in that ending Nov. 2nd 26 cases and 17 deaths occurred in the Province of Caserta; 6 cases and 3 deaths in that of Lecce (including 2 cases and 2 deaths at Brindisi); 6 cases at Palermo; 7 cases and 2 deaths in the Province of Rome (all at Terracina); and 8 cases in the Province of Salerno. (These figures have been communicated by the Turkish Embassy in Rome.) Sporadic cases are said to be occurring still at Brindisi, and (it is stated by the Turkish Consul in that port) the Italian journals mention the continued occurrence of cases at Massafra, Squinzano, Tricase, and Ostuni. All these places are situated in the "heel" of Italy.

Cholera in Bulgaria, Servia, and Roumania.

A fatal case of cholera was reported from Varna on Nov. 17th; the patient had arrived from Constantinople and had completed his five days' quarantine before he was attacked. No further cases of cholera have been reported from either Servia or Roumania.

Cholera in Constantinople and Turkey in Europe.

There has been a considerable extension of the cholera outbreak in this city, as shown by the following figures:—

Week ending Oct.	24th	...	7	cases,	7	deaths.
,, ,,	,,	31st	...	8	,,	4	,,
,, ,,	Nov.	7th	...	63	,,	33	,,
,, ,,	,,	14th	...	132	,,	70	,,
,, ,,	,,	21st	...	173	,,	96	,,

These figures refer only to the civil population; the totals down to the 21st inst. were put at 477 cases and 264 deaths. At present from 20 to 40 cases are being reported daily, and the tendency is still for the figures to rise. The epidemic has no doubt been favoured by the exceptionally mild autumn and prolonged continuance of a warm south wind.

The above figures refer, as stated, solely to the civil population. But there has also been a considerable mortality from cholera among the troops. It is now established beyond doubt that the manœuvres recently held in the Adrianople vilayet have been largely instrumental in spreading cholera, if not in actually introducing it to the European provinces of Turkey and the capital. It is believed that the employment of troops from Trebizond in those manœuvres may have acted in this way. It is certain that the dispersal of troops after the manœuvres were over aided in spreading the infection far and wide. Of the behaviour of the disease during the actual manœuvres little is known. But cholera undoubtedly broke out at Adrianople itself; a serious epidemic occurred among the troops at Hademkeui (on the railway line between Adrianople and Constantinople); further cases were seen at Kirk Kilissé, Tchorlou, Kirdja Ali, and other places in the vilayet; and when the troops reached the coast of the sea of Marmara, and camped in the neighbourhood of Rodosto and Eregli, they were seriously ravaged by the disease. On Oct. 30th 4000 or 5000 of these men were put on board two ships to cross to the Asiatic coast, and during the few hours' voyage no less than 30 cases and 14 deaths from cholera occurred on one ship, while 13 cases were found on the other ship on their arrival at Touzla. The men were interned in the quarantine station at Touzla and subjected to quarantine and disinfection, but the disease continued to spread amongst them and in the village of Touzla adjoining. In the lazaret 99 cases with 69 deaths were seen between Oct. 30th and Nov. 7th, 92 cases and 57 deaths between the 7th and 14th, and some further cases and deaths in the following week. In the village a few cases occurred in each of those weeks. Between Nov. 12th and 19th as many as 25 cases with 19 deaths were recorded there. Meanwhile the outbreak at Rodosto and Eregli on the European side of the Marmara continued; complete figures have not been received, but it is certain that over 100 cases and half as many deaths have occurred there among troops and civilians, and it is possible that double or treble that number have occurred. In the capital itself many cases have been treated in most of the large military hospitals, but the figures hitherto made known are too incomplete, and furnished at too irregular intervals to be usefully quoted.

The most remarkable feature about the present epidemic in this city is the fact that the disease is present over a large proportion of the immense area that the city covers, extending from the Marmara to the Black Sea, and on both shores of the Bosphorus; that small numbers of cases continue to occur in each of the municipal divisions; and that only in one or two (such as Cassim Pasha, Fundukli, &c.) has a real "foyer" of infection formed.

On Nov. 16th, on the arrival of the Constantinople train at Salonica, a passenger was found dead in his compartment (according to the railway authorities); he had been taken ill shortly after passing the last station, where the passengers were medically examined, and died an hour before reaching Salonica. There was bacteriological proof that death was due to cholera.

Cholera in Asiatic Turkey.

In the vilayets of Erzerum and Van the epidemic continues to decline, as shown by the following figures:—

Week ending Oct.	20th	...	23	cases,	22	deaths.
,, ,,	,,	27th	...	7	,,	4	,,
,, ,,	Nov.	3rd	...	24	,,	20	,,
,, ,,	,,	10th	...	5	,,	4	,,
,, ,,	,,	17th	...	0	,,	0	,,

In the Trebizond vilayet the disease is practically stationary. The following are the latest returns:—

Week ending Oct.	23rd	...	23	cases,	21	deaths.
,, ,,	,,	30th	...	15	,,	9	,,
,, ,,	Nov.	6th	...	36	,,	14	,,
,, ,,	,,	13th	...	39	,,	23	,,
,, ,,	,,	20th	...	37	,,	23	,,

The totals here are put down at 639 cases and 352 deaths since the beginning of the outbreak on Sept. 16th.

A few cases of cholera have also occurred at Samsoun, at Kerassonde and Ordou, on the north coasts of Asia Minor, and at Zunguldak (port for the Heraclia mines) and neighbourhood some cases and deaths are still recorded weekly.

In the vilayet of Bagdad the infection has spread widely and caused a considerable mortality. The following returns (admittedly imperfect) have been received:—

From Oct. 6th	to	Oct. 23rd	...	199	cases,	148	deaths.
,, ,, 24th	,,	,, 30th	...	191	,,	177	,,
,, ,, 31st	,,	Nov. 6th	...	156	,,	140	,,
,, Nov. 7th	,,	,, 12th	...	18	,,	17	,,
,, ,, 13th	,,	,, 19th	...	81	,,	62	,,

The totals are put at 645 cases with 544 deaths for the whole vilayet. The disease has appeared not only in Bagdad but also in Kiazimieh, in Mossove, in Amara, in Samara, in Khanikin (on the Persian frontier), and many other places; and finally it has broken out at Kerbella, one of the Shiah holy burying places, where between Nov. 16th and 19th 26 cases and 20 deaths were recorded among Shiah pilgrims.

At Basra there were 13 cases of cholera and 9 deaths between Oct. 20th and 27th; 97 cases and 61 deaths between Oct. 28th and Nov. 3rd; 86 cases and 79 deaths between Nov. 4th and 13th; and 20 cases with 14 deaths between Nov. 13th and 18th. The lazaret of Basra (on the island of Salahieh in the Shatt-ul-Arab river) has also had to deal with considerable numbers of cases among Afghans, Indians, and others, and it seems possible that these persons were actually infected in the lazaret itself. Between Oct. 28th and Nov. 3rd 9 cases and 9 deaths occurred here (all Afghans); between Nov. 4th and 13th 23 cases and 15 deaths; and between Nov. 13th and 18th 4 cases with 4 deaths.

The movements of Moslem pilgrims towards the Hedjaz is now at its height, as the fêtes of Kurban Bairam will fall this year on about Dec. 10th, 12th, and 13th. That it will be a cholera-infected Haj can scarcely be doubted. Already many infected shiploads of pilgrims have been interned in the lazarets of Sinope (on the Black Sea), of Clazomene (near Smyrna), and Beirût, and without trespassing too much on your space it will be impossible to give the details of all these occurrences. The capacity of all these lazarets has been strained to the utmost, and in order to relieve them it was recently agreed between the Constantinople and Alexandria boards of health that pilgrims' ships from the north, going to the Hedjaz, should do their quarantine in the Egyptian lazaret of El Tor. Quite recently cholera has appeared in Smyrna—whether by spread from the Clazomene lazaret or not is not known. Some 13 indigenous cases have already occurred.

Cholera in Muscat.

The following are the latest returns from Muscat :—

Week ending	Oct.	29th	...	13 cases,	12	deaths.
,, ,,	Nov.	5th	...	—	8	,,
,, ,,	,,	12th	...	—	22	,,
,, ,,	,,	19th	...	—	3	,,

Cholera in Tripoli (Africa).

The following returns have been received from Tripoli (Barbary) since the beginning of the epidemic there on Oct. 3rd :—

Between	Oct.	3rd	and	Oct.	16th	...	12 cases,	9	deaths.
,,	,,	18th	,,	,,	23rd	...	28 ,,	22	,,
,,	,,	24th	,,	,,	29th	...	59 ,,	36	,,
,,	,,	30th	,,	Nov.	2nd	...	58 ,,	48	,,
,,	Nov.	6th	,,	,,	9th	...	50 ,,	31	,,
,,	,,	10th	,,	,,	14th	...	46 ,,	52	,,

It will be noted that these returns are for unequal intervals, and that the figures for some days are lacking. With these reservations the totals amount to 253 cases and 198 deaths. Consular reports from Tripoli give rather different figures; they state that down to Nov. 11th there had been 271 cases and 170 deaths, and add that, with the exception of 1 Maltese, 3 Arabs, and 2 or 3 foreigners, all the cases had occurred in the Jewish community.

Cholera in Tunisia.

Information respecting the cholera outbreak in the island of Jerba, off the coast of Tunisia, has been irregularly received, as shown by the following figures :—

On Oct. 25th	...	...	...	...	...	...	7 cases,	6	deaths.
Between Oct.	30th	and	Nov.	2nd	...		55 ,,	42	,,
,,	Nov.	6th	,,	,,	9th	...	50 ,,	31	,,
,,	,,	10th	,,	,,	14th	...	32 ,,	36	,,
,,	,,	15th	,,	,,	21st	...	34 ,,	34	,,

Constantinople, Nov. 24th.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

MEETING OF COUNCIL.

AN ordinary meeting of the Council was held on Dec. 8th, Mr. BUTLIN, the President, being in the chair.

A report was read from the Board of Examiners in Anatomy and Physiology for the Fellowship, stating that 117 candidates were admitted to examination and of these 39 were approved and 78 rejected.

A report was read from the Court of Examiners concerning candidates found qualified for Diploma of Fellow. 67 candidates had presented themselves, and of these 26 acquitted themselves satisfactorily, including two candidates who had not yet attained the legal age of 25 years. It was resolved to issue Diplomas of Fellowship to the remaining 24 candidates. It was resolved to issue Licences in Dental Surgery to 42 candidates found qualified.

A report was received from the Committee on the Annual Report of the Council, and it was resolved, in accordance with the recommendation of the committee, to reply to the proposer and seconder of the resolution advocating the granting to Members representation on the Council, carried at the annual meeting, to the following effect :—

As the matter referred to in the resolution was fully considered by the Council during the present year they are not prepared to re-open the discussion.

The PRESIDENT reported that a vacancy had occurred on the Court of Examiners, and he stated that it would be filled at the meeting of the Council in January. Any Fellow of the College wishing to become a candidate for the office must make application in writing to the Secretary on or before Jan. 4th.

A letter was read from the Assistant Secretary of the Marine Department of the Board of Trade stating that the Board proposes to revise the scales of medicines and medical stores issued by them for merchant ships, and to entrust the revision to a committee consisting, as on the occasion of the last revision in 1888, of members of its medical staff and representatives of the Royal College of Surgeons, Royal College of Physicians, and Pharmaceutical Society of Great Britain, with the addition this time of a representative of the shipping interests concerned; and asking the Council to nominate a representative of the College to act on the committee. Mr. C. T. Dent was nominated to represent the College on the committee.

A letter was read from Sir Henry Morris, Bart., reporting the proceedings of the General Medical Council at its recent session. It was resolved that the best thanks of the Council should be given to Sir Henry Morris for his services as the representative of the College.

A letter was read from the Right Hon. the Lord Mayor announcing the opening of the Mansion House Fund for providing a memorial of King Edward in London, and asking the President to bring the appeal to the notice of Members of the College living in London.

The PRESIDENT reported the delivery of the Bradshaw lecture on Cancer on Dec. 7th by Sir A. Pearce Gould, K.C.V.O., 126 visitors, including Prince Alexander of Teck, being present. The best thanks of the Council were given to Sir A. Pearce Gould for his lecture and he was requested to publish it.

The Sir Gilbert Blane Medals were awarded to Fleet Surgeon George Trevor Collingwood, M.V.O., H.M.S. *Racer*, 1909; and to Fleet-Surgeon Arthur Reginald Bankart, M.V.O., K.H.P., H.M. Yacht *Victoria and Albert*, 1909. These medals were founded by Sir Gilbert Blane, Bart., F.R.C.S., a distinguished physician best known for the sanitary reforms which he effected in the navy, and the success of the measures which he introduced for scurvy. Two gold medals are conferred once in every two years on two medical officers of the Royal Navy "who in the time required shall have delivered to the proper office journals evincing the most distinguished proofs of skill, diligence, humanity, and learning in the exercise of their professional duties." The journals are submitted for adjudication to the President of the Royal College of Physicians of London, the President of the Royal College of Surgeons of England, and the Director-General of the Medical Department of the Royal Navy.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 77 of the largest English towns 7869 births and 5445 deaths were registered during the week ending Dec. 10th. The annual rate of mortality in these towns, which had steadily increased in the six preceding weeks from 13·0 to 18·1 per 1000, declined to 16·8 in the week under notice. During the first ten weeks of the current quarter the death-rate in these towns averaged 14·8 per 1000. In London during the same period the death-rate, calculated on a probable over-estimate of its population, was equal to 15·5 per 1000. The annual death-rates last week in the 77 towns ranged from 6·4 in Wallasey, 7·4 in Barrow-in-Furness, 8·6 in King's Norton, and 9·4 in Leyton, to 21·7 in Brighton, 22·7 in Wigan, 24·0 in Tynemouth, and 24·5 in Preston. The 5445 deaths from all causes in the 77 towns last week showed a decline of 421 from the increasing numbers in recent weeks, and included 332 which were referred to the principal epidemic diseases, against 420 and 416 in the two preceding weeks; of these 332 deaths, 143 resulted from measles, 62 from whooping-cough, 39 from diarrhœa, 36 from diphtheria, 30 from scarlet fever, 21 from enteric fever, and 1 from small-pox. The mean annual rate of mortality from these epidemic diseases in the 77 towns last week fell to 1·0 per 1000 from 1·3 in each of the two previous weeks. No death from any of these epidemic diseases was registered last week

in Willesden, Sunderland, East Ham, Walthamstow, Leyton, Halifax, or in 14 other smaller towns; the annual death-rates therefrom ranged upwards, however, to 3·3 in Portsmouth, 3·5 in Grimsby, 3·7 in Tynemouth, 3·9 in Rotherham, and 4·0 in Brighton. The fatal cases of measles in the 77 towns, which had steadily increased in the five preceding weeks from 101 to 231, declined last week to 143; the highest annual rates from this disease last week were 1·9 in Portsmouth, 2·1 in Grimsby, 2·4 in Brighton, and 3·1 in Rotherham. The 62 deaths from whooping-cough showed, however, an increase upon recent weekly numbers, and caused the highest rate in Reading. The 39 deaths attributed to diarrhœa were fewer than in any week since last winter. The 36 deaths referred to diphtheria showed a further decline from recent weekly numbers, and included 13 in London and its suburban districts, and 2 each in Portsmouth, Rochdale, Leeds, and Cardiff. The 30 fatal cases of scarlet fever exceeded the number in the previous week by 5; 3 occurred in Manchester and 2 each in West Ham, Birmingham, Liverpool, Bolton, and Sheffield. The deaths referred to enteric fever, which had been 25 and 24 in the two previous weeks, declined to 21 last week, and included 2 in Portsmouth, 2 in Burnley, 2 in Stockton-on-Tees, and 4 in Wigan, which were equal to an annual rate of 2·3 per 1000. The fatal case of small-pox was registered in St. Helens. The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever Hospital, which had declined in the four preceding weeks from 1882 to 1746, had further fallen to 1719 on Saturday last; 169 new cases of this disease were admitted to these hospitals during last week, against 180, 153, and 170 in the three preceding weeks. The 1703 deaths from all causes in London last week included 506 which were referred to pneumonia and other diseases of the respiratory system, against numbers increasing steadily from 246 to 669 in the five preceding weeks; they exceeded, however, by 140 the corrected average number in the corresponding week of the five years 1905–09. The causes of 49, or 0·9 per cent., of the deaths registered during last week in the 77 towns were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified last week in Leeds, Bristol, Nottingham, Leicester, Salford, Oldham, and in 47 other smaller towns; the 49 uncertified causes of death in the 77 towns last week included 9 in Birmingham, 7 in Liverpool, and 3 each in Stoke-on-Trent, Bootle, and Bury.

HEALTH OF SCOTCH TOWNS.

In eight of the principal Scotch towns 838 births and 622 deaths were registered during the week ending Dec. 10th. The annual rate of mortality in these towns, which had steadily increased in the four preceding weeks from 13·3 to 17·5 per 1000, declined to 17·2 in the week under notice. During the first ten weeks of the current quarter the death-rate in these eight towns averaged 14·7 per 1000, and was slightly below the mean rate during the same period in the 77 largest English towns. The annual death-rates in the eight Scotch towns last week ranged from 14·0 and 16·0 in Aberdeen and Glasgow, to 19·0 in Paisley and 23·0 in Dundee. The 622 deaths from all causes in the eight towns last week showed a decline of 11 from the number in the previous week, and included 40 which were referred to the principal epidemic diseases, against 61, 55, and 47 in the three preceding weeks; of these 40 deaths, 13 resulted from diphtheria, 9 from diarrhœa, 8 from whooping-cough, 4 from scarlet fever, 4 from "fever," and 2 from measles, but not one from small-pox. The mean annual rate of mortality from these epidemic diseases in the eight towns last week was equal to 1·1 per 1000, and exceeded by 0·1 the rate from the same diseases in the 77 English towns. The deaths referred to diphtheria in the eight Scotch towns, which had been 14 and 11 in the two preceding weeks, rose again to 13 last week, of which 7 occurred in Glasgow, and 3 both in Edinburgh and in Dundee. The 9 deaths attributed to diarrhœa showed a marked decline from the numbers in recent weeks, and included 2 each in Glasgow, Dundee, and Aberdeen. The fatal cases of whooping-cough, which had been 13, 12, and 10 in the three preceding weeks, further declined to 8 last week, of which 5 were returned in Leith and 3 in Glasgow. The 4 deaths from scarlet fever were fewer than in any recent week; 2 occurred in Dundee and 1 both in Glasgow and in Edinburgh. Of the 4 deaths referred to "fever" 3 were returned in Glasgow and 1 in Leith; 2 were certified as enteric fever, and 2 as cerebro-spinal meningitis, both of which occurred in Glasgow. The deaths referred to diseases of the respiratory system in the eight towns, which had increased from 65 to 157 in the four preceding weeks, declined to 151 last week, and were 123 below the number in the corresponding week of last year. The causes of 26, or 4·2 per cent., of the deaths in the eight towns last week were not certified or not stated; in the 77 English towns the proportion of uncertified causes of death last week did not exceed 0·9 per cent.

HEALTH OF IRISH TOWNS.

In 22 town districts of Ireland, having an estimated population of 1,151,790 persons, 533 births and 432 deaths were registered during the week ending Dec. 10th. The mean annual rate of mortality in these towns, which had been equal to 19·1 and 18·1 per 1000 in the two preceding weeks, rose to 19·6 in the week under notice. During the first ten weeks of the current quarter the annual death-rate in these Irish towns averaged 17·3 per 1000; the mean rate during the same period did not exceed 14·8 in the 77 largest English towns and 14·7 in the eight Scotch towns. The annual death-rate during last week was equal to 23·2 in Dublin, 20·1 in Belfast, 13·7 in Cork, 15·6 in Londonderry, 13·7 in Limerick, and 7·8 in Waterford; the mean annual death-rate last week in the 16 smallest of these Irish towns was equal to 17·0 per 1000. The 432 deaths from all causes in the 22 town districts last week showed an increase of 32 upon the number in the previous week, and included 33 which were referred to the principal epidemic diseases, against 29 and 36 in the two previous weeks; these 33 deaths were equal to an annual rate of 1·5 per 1000; in the 77 English towns the mean rate from the same diseases did not exceed 1·0 per 1000, and in the eight Scotch towns was equal to 1·1. The 36 deaths from these epidemic diseases in the Irish towns last week included 15 from whooping-cough, 5 from diphtheria, 6 from diarrhœa, 5 from measles, and 1 each from scarlet fever and enteric fever, but not one from small-pox. The 15 fatal cases of whooping-cough showed a marked increase upon recent weekly numbers, and included 11 in Dublin and 3 in Londonderry. Of the 6 deaths attributed to diarrhœa (fewer than in any recent week), 4 occurred in Belfast and 2 in Dublin. The 5 fatal cases of measles, of which 3 were returned in Belfast and 2 in Dublin, showed a decline of 9 from the number in the previous week. The 5 deaths from diphtheria, of which 4 occurred in Belfast, corresponded with the number in the previous week. The death from enteric fever was returned in Dublin, and that from scarlet fever in Belfast. The deaths in the 22 towns last week included 116 which were referred to pneumonia and other diseases of the respiratory system, against 80, 100, and 108 in the three preceding weeks. The causes of 18, or 4·2 per cent., of the deaths registered in the Irish towns last week were not certified; in the 77 English towns the proportion of uncertified deaths last week did not exceed 0·9 per cent., and in the eight Scotch towns it was equal to 4·2 per cent.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

IN accordance with the provisions of Order in Council of April 1st, 1881, Fleet-Surgeon Edward John Morley has been placed on the Retired List, with permission to assume the rank of Deputy Inspector-General of Hospitals and Fleets (dated Dec. 8th, 1910).

In accordance with the provisions of Order in Council of April 1st, 1881, Deputy Inspector-General of Hospitals and Fleets Joseph Crowley has been placed on the Retired List, at his own request, with permission to assume the rank of Inspector-General of Hospitals and Fleets (dated Dec. 7th, 1910).

The following appointments are notified:—Fleet-Surgeon: H. Spicer to the *Bristol*, on commissioning. Staff-Surgeons: J. C. Rowan to the *Albemarle*, on recommissioning; S. Croneen to the *Mars*, and L. E. Dartnell to the *Victorious*, temporary. Surgeon: C. H. L. Petch to the *Victory*, additional, for disposal.

ROYAL ARMY MEDICAL CORPS.

Captain Edward Gibbon is seconded for service with the Egyptian Army (dated Nov. 13th, 1910.)

Colonel R. Porter has taken over duty as Principal Medical Officer at Malta. Colonel T. J. R. Lucas, principal medical officer of the First (Peshawar) Division, has been transferred from Cherat to Peshawar. Lieutenant-Colonel L. T. M. Nash has been selected to command the station hospital at Karachi in succession to Lieutenant-Colonel R. I. R. Macleod, appointed to command the station hospital at Aden. Lieutenant-Colonel G. F. Gubbin, on arrival home from Colaba, has been posted to the Irish Command. Lieutenant-Colonel A. E. Tate, from Ambala, has taken up duty at Kasauli. Lieutenant-Colonel W. E. Berryman has arrived home from India, tour-expired. An exchange on the foreign service roster has been approved by the War Office between Lieutenant-Colonel C. W. Johnson serving at Gibraltar, and Lieutenant-Colonel S. G. Allen serving in the London District. Lieutenant-Colonel G. Cree has arrived home, tour-expired, from Madras. Lieutenant-Colonel R. R. H. Moore, from Bulford Camp, has been appointed Administrative Medical Officer at Belfast, vice Lieutenant-Colonel E. J. E. Risk. Major C. W. H. Whitestone has been transferred from Cherat to Peshawar. Major H. A. L. Howell, from Gibraltar, has taken up duty as Medical Officer in charge of the Royal Army Clothing Factory at Pimlico. Major J. E. Carter, from Landguard Fort, has joined at Chatham. Major A. F. Tyrrell has joined for duty at Fermoy from Kilworth Camp. Major A. O. B. Wroughton has been transferred from the Eastern Command to the Southern Command and appointed Specialist in Dermatology and Venereal Diseases at the Military Hospital, Hilsea. Major H. P. W. Barrow, on termination of his appointment as Adjutant of No. 3 (West Lancashire Division) District R.A.M.C. Territorial Force School of Instruction, has embarked for a tour of service in Jamaica. Captain W. R. Galwey has been appointed Staff Surgeon at Lahore Cantonment. Captain J. P. Lynch, Captain A. Dawson, Captain E. W. Powell, and Captain A. D. O'Carrol have arrived home from India. Captain J. M. Cuthbert has been appointed Specialist in Pathology at Edinburgh. Captain E. W. Powell, from Belgaum, on arrival at Aden, has been placed in charge of the Brigade Laboratory. The following officers (Captains) have joined at the Royal Army Medical College for a course of instruction for promotion to the rank of Major: H. T. Stack, B. G. Patch, A. C. H. Gray, T. S. Dudding, R. H. MacNicol, H. H. J. Fawcett, S. L. Pallant, C. R. Sylvester-Bradley, S. E. Lewis, P. J. Hanafin, J. D. Richmond, E. M. Glanvill, W. MacD. MacDowall, T. J. Wright, F. J. Turner, E. C. Whitehead, and R. B. Hole. Captain D. Ahein has been transferred from Cork to Limerick. Captain G. A. Kempthorne, from Amritsar, has joined for duty at Dalhousie. Captain A. F. Carlyon, on termination of his leave from West Africa, has been posted to Devonport. Lieutenant T. W. Stallybrass has joined at the Royal Victoria Hospital, Netley, from Hamilton Camp. Lieutenant A. T. J. McCreery, from West Down North, has been posted to Birmingham. Lieutenant B. A. Odlum, from Tidworth Park, has embarked for a tour of service in South Africa.

INDIAN MEDICAL SERVICE.

Colonel G. W. P. Dennys has been appointed Principal Medical Officer of the Aden Brigade in succession to Colonel W. A. Quayle, transferred as Principal Medical Officer of the Abbottabad and Sialkot Brigades. Lieutenant-Colonel H. B. Melville has been appointed to officiate as Civil Surgeon of Simla West during the absence on leave of Lieutenant-Colonel F. O'Kinealy. Lieutenant-Colonel E. Jennings, Superintendent of the Central Prison at Fategarh, has been granted one month's privilege leave. Lieutenant-Colonel W. H. B. Robinson, Residency Surgeon at Jaipur, has been appointed by the Foreign Department of the Government of India to be Residency Surgeon in Rajputana, in succession to Lieutenant-Colonel H. N. V. Harington, on his retirement. Major A. W. T. Buist has been appointed Civil Surgeon at Ambala. Major J. C. Holdich-Leicester has been granted two years' combined leave home from India. Major A. Leventon has been appointed Civil Surgeon at Darrang. The services of Captain A. E. Grisewood have been placed at the disposal of the Punjab Government for plague duty. Captain H. Watts, district plague medical officer at Hoshiarpur, has been detailed for a course of instruction in clinical bacteriology and technique at the Central Research Institute, Kasauli. The services of Captain H. Ross have been temporarily placed at the disposal of the Government of the United Provinces. Captain R. Kelsall has been appointed to officiate as Resident Medical Officer of the Rangoon General Hospital, vice Captain H. A. Williams, D.S.O., appointed Officiating Superintendent of the same institution. Captain H. C. Buckley has had his leave extended.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Lieutenant Henry R. Borcherds is confirmed in his rank.

The undermentioned lieutenants are seconded for service with the Medical Unit of the Edinburgh University Contingent, Officers Training Corps (dated Oct. 1st, 1910):—William Darling and John M. Darling.

TERRITORIAL FORCE.

Royal Army Medical Corps.

2nd Home Counties Field Ambulance, Royal Army Medical Corps: Captain David L. Hamilton to be Major (dated Dec. 14th, 1910).

4th Southern General Hospital, Royal Army Medical Corps: Captain Arthur E. Carver resigns his commission (dated Dec. 14th, 1910).

5th Southern General Hospital, Royal Army Medical Corps: Captain John Kyffin, from the List of Officers attached to Units other than Medical Units, to be Major (dated Sept. 28th, 1910).

3rd East Anglian Field Ambulance, Royal Army Medical Corps: Walter Rowland Southall Roberts to be Lieutenant (to be supernumerary) (dated Nov. 1st, 1910).

3rd Northumbrian Field Ambulance, Royal Army Medical Corps: Lieutenant Abram C. Barker resigns his commission (dated Dec. 10th, 1910).

2nd West Riding Field Ambulance, Royal Army Medical Corps: Quartermaster and Honorary Lieutenant James Boswell is granted the honorary rank of Captain (dated Nov. 11th, 1910).

Attached to Units other than Medical Units.—Captain John W. T. Walker resigns his commission (dated Dec. 10th, 1910).—Lieutenant Francis W. Squair to be Captain (dated Nov. 17th, 1910).

For attachment to Units other than Medical Units.—George Cordy Jeaffreson to be Lieutenant (dated Nov. 7th, 1910).

Officers Training Corps.

Edinburgh University Contingent, Senior Division, Officers Training Corps: Lieutenant William Darling (serving with the medical unit), to be granted the local rank of Captain, with the pay and allowances of that rank (dated Oct. 1st, 1910).

THE TERRITORIAL FORCE NURSING SERVICE.

On Nov. 13th the Lady Mayoress presided at the annual meeting of the Grand Committee of the City and County of London Territorial Force Nursing Service, which was held at the Mansion House. The annual report showed that the expenditure had been £33, and that applications for enrolment continued to be numerous.

DEATHS IN THE SERVICES.

Brigade-Surgeon-Lieutenant-Colonel John Mackenzie, A.M.D., at Dover, in his seventy-eighth year. He entered the service in 1858 as assistant surgeon, and reached the rank of brigade-surgeon in 1884. He served throughout the campaign of 1860 in North China (medal) and retired in 1888.

THE HEALTH OF THE ROYAL NAVY.

The annual statistical report of the health of the Navy for the year 1909 shows that, compared with the preceding five years, the health of the service continues to improve, the invaliding and death ratios being lower and the average loss of service for each person less. The report, with which we hope to deal more fully in an early issue of THE LANCET, contains interesting appendices on vision, on colour tests, and on beri-beri.

Captain Howard Ensor, D.S.O., R.A.M.C., has been granted the Royal licence and authority to accept and wear the Imperial Ottoman Order of the Osmanieh, Fourth Class, which has been conferred upon him by the Khedive of Egypt in recognition of valuable services rendered.

Correspondence.

"Audi alteram partem."

CARCINOMA IS A PARASITIC DISEASE.

To the Editor of THE LANCET.

SIR,—Sir Alfred Pearce Gould, in his most interesting and suggestive lecture on cancer, at which I had the satisfaction of presiding at the Royal College of Surgeons of England on Dec. 7th, criticised very courteously the views which were expressed in my Bradshaw lecture five years ago.[1] He quoted my "text" correctly: "That the carcinoma cell is an independent organism, &c.," but he did not correctly quote the arguments I used later in the lecture. For his next paragraph (addressed to me) was as follows: "You shrank from accepting Hauser's suggestion that the protozoal cells of cancer are derived or descended from the living cells of the host, and asserted rather that 'the parasite is introduced into the body from without.'"[2] My actual words are thus quoted and the only place in which I can find them in your report of my lecture is in the following sentence: "I suppose we must then assume that *the parasite is introduced into the body from without*, after the manner of parasites generally; or that it is formed, in some unknown manner, within the body of the host."[3]

After discussing the evidence in favour first of the external, then of the internal, origin of the carcinoma cell, I said: "It must be admitted that these three features of carcinoma, the characters of the cell, the structure of the tumour, and the age-incidence, make it difficult to conceive the idea of a parasite introduced into the body from without. And they do strongly suggest that the parasite is actually formed or developed within the body of the host, and that it is in some manner derived from the elements of the host. Hauser has no doubt that his new race of cells is derived from the elements of the host, and appears to find no difficulty in the hypothesis. I confess to me it is an astounding proposition, for, set forth in plain terms, it is none other than the origin of new species of the lowest forms of animal—of protozoa. The mode of origin which is suggested is so different from that we have been accustomed to accept for the last five-and-twenty years that I scarcely dare to set it down in words. That there will be much discussion and dispute over it I cannot doubt, for I am quite confident that time and research will confirm the view I have expressed to-day of the nature of the carcinoma cell."[4]

In order to be sure of the views I had expressed, I read my lecture through very carefully. There is no doubt that I heartily wished, at the time I delivered it, that the evidence would be in favour of the entrance of the carcinoma cell from without. But I was forced to acknowledge that the evidence was stronger in favour of the formation of the cell within the body. Following the argument to its logical conclusion, I was further forced to admit that, if this were so, it would be necessary to admit that the carcinoma cell is a new creation, and, still further, that it was probable this new creation was derived from the elements of the host. No wonder, in the face of this conclusion, I was astonished at the light manner in which Hauser treated the hypothesis. I am sure the real truth never dawned upon him. Nor do I think that Dr. C. Powell White,[5] who expressed the view "that the cells themselves of cancer act as parasites," really appreciated the significance of his suggestion. For he takes the view of Adami that the cells acquire the "habit of growth." "Once the cells have acquired this habit they behave as independent parasites."[6]

I am very glad that Sir Alfred Pearce Gould has given me the opportunity of again stating my case. It has never been out of my mind for long together during the last five years. I have been watching all the new evidence which has been derived from observation and experiment, and have been collecting certain evidence on my own part with the intention of again advancing and defending the argument of the Bradshaw lecture of 1905. I shall hope to do this in the course of the coming year, either in a couple of lectures or in some other manner.

In the meantime I would say that every discovery of the last five years is in favour of the "text" of my Bradshaw lecture: "That the carcinoma cell is an independent organism, like many a protozoon; that it lives a life which is wholly independent and proper to itself; and that it lives as a parasite in the body of the animal which is affected with carcinoma, deriving its nourishment from this host, and doing nothing to repay the host for the sustenance of which it robs him." The evidence which was at that time a little in favour of the internal as against the external origin of the carcinoma cell has been much strengthened. And I am prepared to apply the theory to cancer of every kind instead of limiting it (as I did five years ago for convenience) to carcinoma.

I am, Sir, yours faithfully,

Dec. 12th, 1910. HENRY T. BUTLIN.

[1] THE LANCET, 1905, vol. ii., 1748.
[2] THE LANCET, 1910, vol. ii., p. 1665.
[3] Loc. cit., p. 1753.
[4] Loc. cit., p. 1753.
[5] When I first formed the opinion that the carcinoma cell is an independent organism and acts as a parasite in the body of the host, I did not know it had ever been previously expressed. Shortly before delivering the Bradshaw lecture I discovered Hauser's paper in Ziegler's Beiträge, 33, S. I., 1903; and, two years ago, Dr. C. Powell White pointed out to me that he had made a similar suggestion in his Erasmus Wilson lectures at the College of Surgeons in 1902. In his "Lectures on the Pathology of Cancer," Manchester, 1908, he concludes the last lecture with these words: "We can say, then, that cancer is not due to a specific parasite or parasites, but, on the other hand, we can say that the cancer cells themselves act as parasites. This latter view will explain all the phenomena of cancer."
[6] THE LANCET, 1902, vol. i., p. 494.

THE BRADSHAW LECTURE ON CANCER.

To the Editor of THE LANCET.

SIR,—In Sir Alfred Pearce Gould's most interesting Bradshaw Lecture on Cancer he notes that primary cancer is not always single. Years ago, in the post-mortem room of Guy's Hospital, several times in the course of ten years or so I came across what seemed to be two independent centres of cancer in the same body. Such cases, however, do not occur often, unless, perhaps, new growths are too hastily assumed to be *secondary* when they are not really so, and I am by no means sure that this may not sometimes be the case. But what I did more commonly find, as others must have done, was the presence of innocent new growths in the same body with malignant ones, multiple lipomata or fibromata more especially. And it has always seemed to me that the two phenomena may need consideration the one with the other when the origin of cancer is in question.

I am, Sir, yours faithfully,

Portland-place, W., Dec. 10th, 1910. JAMES F. GOODHART.

A CORRECTION.

To the Editor of THE LANCET.

SIR,—I would not have trespassed on your valuable space had your reviewer of the "Phases of Evolution and Heredity" not shown a most ludicrous ignorance of the subject criticised. He states on p. 1618 of THE LANCET of Dec. 3rd: "To put it briefly, the 'theory' suggested by himself is that 'the gametes, before combination to form a zygote, do not contain the complete outfit of determinants necessary to form an adult and its progeny'; that changes in the zygote make up the necessary complement; and it is these zygotic changes which produce the results known as 'Mendelian.'"

This definition of what your reviewer terms "Mendelian results" is quite absurd. The union of the necessary gametes whose chromosomes have been reduced to a half by the loss of the polar bodies makes up a zygote with the necessary number of chromosomes, as van Beneden showed in 1883. This is a great fundamental fact in embryology, but has to do with fertilisation, not with Mendelism. The statement that my theory is "that changes in the zygote make up the necessary complement" is probably the best imitation of Lewis Carroll's nonsense that I have read. When the zygote is formed the chromosomes are complete and need no supplement. What the review shows is that your reviewer has not grasped the elements on which fertilisation is based.

My difficulty, however, is to find out from your reviewer's caricature what theory he refers to. I suspect it is the theory of zygotic segregation that has confused him.

The essence of Mendelism is, in my opinion, autonomy of the unit-characters, so that they do not blend in transmission, but reappear unchanged in a certain ratio. The results of

Mendel's experiments were to show that the contrasted unit-characters gave plants with these contrasted characters in the ratio 1 : 2 : 1, a frequency result. Mendel's theory—gametic segregation—was that this was a frequency result due to the combination of the pollen grains and egg cells and thus like $(a + b)^2$ we get 1 : 2 : 1. For reasons I need not state here I have suggested that the determinants of the unit-characters are segregated according to the law of frequency, and that this happens in the zygote. This was suggested to me by the changes in the free-martin, a sterile bull usually co-twin with a potent bull, both derived from one zygote, where in the zygote the unit-character (epoöphoron and prostatic utricle) is segregated into the sterile animal. The question of gametic combination *versus* zygotic segregation is the most important in Mendelism. Everything depends on it—it is not a "slight criticism of Mendelism"—and that is my main reason for troubling you with this letter.

I am, Sir, yours faithfully,

Edinburgh, Dec. 5th, 1910. D. BERRY HART.

*** The author's complaint is just. The attribution to him in the review of the statement that "changes in the zygote make up the necessary complement, &c.," was an error. It should, of course, have been explicitly stated that the zygotic segregation specially insisted on by the author is subsequent to the union of gametes which makes up this necessary complement. Our reviewer writes regretting the error, adding: "But that it was not due to a misunderstanding or purposive misrepresentation of the author's special theory is clear from the subsequent quotations from pp. 94, 95 of the book. The sentence quoted by the author as the reviewer's 'definition' of Mendelian results was not a definition of anything, but merely a condensed indication of the line of argument employed to lead up to the author's theory of 'zygotic segregation' or division of the zygote into a 'propagative and a somatic part,' which he opposes to the hypothesis of gametic segregation as set forth by Mendel. The reviewer's error, even if it had been made in ignorance, does not touch the main criticism, which is, in effect, that the intrinsic theory of variation, &c., is but a hypothetical amendment, or an attempt at a reconciliation, of certain existing hypotheses rather than a comprehensive handling of the subject as a whole."—ED. L.

THE INTRAVENOUS INJECTION OF SALVARSAN, OR "606."

To the Editor of THE LANCET.

SIR,—Salvarsan, or "606," to give Professor Ehrlich's salt its more popular name, may be given by intramuscular or by intravenous injection. When administered intramuscularly there is for some few days after undoubtedly a very considerable amount of pain, which may be controlled by morphia; but morphia, whatever "606" may turn out to be, is certainly no cure for syphilis, and the patient is better without any further addition from the Pharmacopœia of a poisonous nature, saturated, as he already is, with the spirochæta and the salvarsan. On the other hand, when the injection is made directly into the vein, there is no pain caused beyond the prick of the needle, either at the time of the operation or afterwards.

This point alone is a very definite reason for a preference in favour of the intravenous method, and a reason to which the patient himself would be the first to subscribe. Beyond this, however, I think I can, reasoning by analogy, give good cause to show why it should also have the preference over intramuscular injection on account of its probable greater action and efficiency when introduced intravenously. Now, during the years 1896–1897, when I published a paper on the Technique of the Treatment of Syphilis by Intravenous Injection of Mercury,[1] I had certain primary and secondary cases in private undergoing six-week courses of this treatment three times a year over two years, with, at the time, highly satisfactory results. These cases being in private enabled me, when Wassermann perfected his reaction, to communicate with them and to obtain their blood for the purpose of finding if they were positive or negative to the disease.

Although, from the point of view of statistics, the numbers are not numerous enough to deduce any absolute conclusion, yet the way their bloods have been returned as negative, without exception, is highly suggestive of the efficacy of that treatment by mercury directly into the blood-stream. The reason for this efficacy is, I take it, that the medicament is directly introduced into the very atmosphere of the body, into the blood-stream itself, and so has the same advantages as the spirochæta which has taken the same road to reach the most out-of-the-way cells and tissues, where, taking part in their metabolism, the "war" with the poison is carried on simultaneously and immediately all over the body. Again, owing to the rapid excretion of the mercury when given in this way, the injections being repeated three times a week, the specific poison receives hard and direct blows delivered against it with a very telling frequency.

Now if this reasoning is correct for Hg, how much more important is it to make the blow delivered by salvarsan a "knock-out" one; for here we are aiming at attaining our object of the total destruction of the spirochæta by means of one single injection, and look upon the necessity of repeating the operation as a comparative failure; for, whatever Hg may do, there is a probability that the complicated molecule we name salvarsan or "606" induces the blood to give rise to an antigen, because if we fail with the first dose to annihilate, any second dose must be greater in quantity to enable us to produce the desired result. In conclusion, therefore, if we have in salvarsan a bullet which will kill the enemy, I hope I have given some good reason for showing how we can make that bullet a dum-dum.

I am, Sir, yours faithfully,

Sackville-street, W. JAMES B. BYLES.

[1] Brit. Med. Jour., April 4th, 1897.

THE OWNERSHIP OF PRESCRIPTIONS.

To the Editor of THE LANCET.

SIR,—I am glad to learn from Dr. Lucas Benham's letter, which appears in this week's issue of THE LANCET, that my article on the above subject has excited interest, and has been on the whole approved so far afield, and particularly that Dr. Benham makes it a practice to indicate on the face of every prescription he writes the maximum time for which it should be used. This excellent practice deserves, however, to be supported by better arguments than those which can be deduced from the analogy—in my opinion a false one—of a cheque. There is no parity in the conditions. A cheque is an order addressed to a banker, requiring him to pay a sum of money to a certain person, or to the bearer of the cheque, out of funds previously deposited with him by the writer of the cheque. A prescription is a formula given by a physician to his patient, who can have it compounded by any competent person he chooses to employ. The banker is an agent of the maker of the cheque; the dispenser is an independent contractor who deals only with the holder of the prescription. These are the conditions generally obtaining in this country; they may perhaps be modified in South Australia.

I am, Sir, yours faithfully,

Middle Temple, Dec. 12th, 1910. H. WIPPELL GADD.

THE RESULTS OF BRONCHIAL OBSTRUCTION.

To the Editor of THE LANCET.

SIR,—I have just read Dr. Newton Pitt's admirable Bradshaw Lecture with great interest, for it has taught me something that I did not know before, although that something has been under my observation for many years and I have missed it. I refer to the fact that a partial compression of a bronchus is capable of producing an over-distended lung. On finishing Dr. Pitt's lecture I immediately looked up my skiagrams of aneurysm, and found that three out of seven show the condition distinctly. I have not yet had time to go through my hospital cases, but intend doing so on the first opportunity. As Dr. Pitt has kindly mentioned my name in connexion with two of the published skiagrams I feel that a word about them will not be out of place. I remember the cases well, as they occurred in Victoria Park Hospital. The skiagram shown in Fig. 7 was actually mistaken for a pneumothorax, but that was as long ago as 1902; since

then we have become more critical. I am quite sure now that the case was one of overdistended lung and not a pneumothorax, for the following simple reason that I have never seen a skiagram of a pneumothorax that did not show a shadow of the collapsed lung. The shadow of the collapsed lung of course varies a good deal, but it is always there. It may show a very considerable shadow, as in Fig. 8 of Dr. Pitt's lecture, due, no doubt, to the tuberculous infiltration preventing complete collapse. In other cases the shadow of the collapsed lung can be seen running beside the spinal shadow, but it is always there. I hope to place these cases on record shortly.

I am, Sir, yours faithfully,

Harley-street, W., Dec. 10th, 1910. HUGH WALSHAM.

TREATMENT OF ULCERS OF THE LEG BY A PASTE.

To the Editor of THE LANCET.

SIR,—Your annotation in THE LANCET of Dec. 10th, p. 1716, implies that Dr. B. A. Thomas has discovered a new treatment for varicose ulcers. Twenty years ago when an outpatient dresser at St. Thomas's Hospital I spent most of my time dressing varicose ulcers more or less successfully with what we as students called "Unna's"—the composition of this paste being glycerine, gelatin, and zinc oxide—applied warm on carbolic gauze. I still use this preparation, and it is quite the best provided the dressing is applied from the arch of the foot to the tubercle of the tibia.

I am, Sir, yours faithfully,

Bromley, Kent, Dec. 10th, 1910. C. W. GRANT-WILSON.

INVALIDITY INSURANCE.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Dec. 10th Mr. W. A. Robertson, actuary, Century Insurance Company, raises the question of invalidity insurance in a most interesting manner. In doing so he states that whilst mortality is improving invalidity is increasing, and he bases his argument on the grounds of the available statistics of his company during the past 25 years with reference to sickness insurance. Quite recently, elsewhere, I had the opportunity of raising and discussing this very question with Mr. Robertson, and now that it has appeared in the columns of THE LANCET I would like to add a few remarks. Remembering that I am engaged as medical examiner to insurance companies in London, I cannot accept his deductions as to an increased invalidity as they are based upon selected statistics which are always open to error, and for the same reason "returns" from benefit societies are not a true index as to increase of invalidity. For my purpose it is unnecessary to refer to the conditions under which sickness policies are issued to the public, and the members of the medical profession are well aware of the amount of abuse that arises in connexion with benefit societies. I need only cite the cases where men in addition to having a sickness policy are also members of two or three benefit societies to show how erroneous it would be to draw any conclusion as to increased invalidity from any statistics relating to such persons. I am sure that all students of public health and preventive medicine will require stronger proofs on the question of increased invalidity than those forthcoming from insurance companies and benefit societies. I take it as a significant sign of the times to find the insurance companies appreciating and acknowledging the achievements of public health and preventive medicine, and in my opinion it will not be long before all large commercial undertakings will find it to their advantage to have the assistance of medical men holding the D.P.H. I need hardly say that the statistics published and compiled by the life offices have no relation to those relating to sickness insurance, and if they did not relate to selected lives could be taken as a true index to the mortality of the entire community.

I am, Sir, yours faithfully,

Cannon-street, E.C., Dec. 12th, 1910. JOHN J. SCANLAN.

To the Editor of THE LANCET.

SIR,—Mr. W. A. Robertson's letter on Invalidity Insurance in your last issue contains some interesting statistics of the relative amount of sick benefit paid to members of different ages under a system of sickness insurance during the past 25 years. The statistics referred to in the letter do not, however, give any support to the assertion that "it is an indisputable fact that sickness is actually on the increase." The returns of the Century Insurance Company, to which Mr. Robertson, as actuary, has access, may quite probably show an increasing rate of claims for sick benefit among the members in recent years, although his letter does not contain any proof of such increase. Moreover, if the existence of such increase be assumed, it could not be accepted as proof of any real increase of sickness, but only as proof that under this system of insurance, as Mr. Robertson admits, "people now lie up where previously they would have continued to work." A satisfactory national system of sickness insurance has long been a desideratum with those interested in sanitary progress, but the differentiation of what constitutes definite sickness presents one of the difficulties that still stand in the way of its realisation. Mr. Robertson remarks on the incongruity of his assumed fact that "while mortality is declining invalidity is increasing," and it would indeed be surprising if a real increase of sickness could be proved to exist coincidently with the recent steady decrease in the national death-rate. Insurance against sickness, and the resulting benefit during invalidity, is undoubtedly beneficial to public health, and very probably assists in reducing the death-rate, but it is obviously impossible to accept increase of payments by an insurance company for sick benefit as conclusive proof of a real increase of sickness, even among its members. Similarly, experience of the results of the Workmen's Compensation Act suggests a marked increase of accidents and injuries to workmen, but should not be accepted as any proof of actual increase in the proportion of occurring accidents and injuries. If Mr. Robertson has access to statistics showing a marked increase in the ratio of sick benefit paid to the members of his company in recent years, they would be interesting, but they must not be assumed to prove actual increase in the ratio of national sickness.

I am, Sir, yours faithfully,

Surbiton, Dec. 12th, 1910. NOEL A. HUMPHREYS.

THE MOTOR FUNCTIONS OF THE STOMACH.

To the Editor of THE LANCET.

SIR,—I have been interested in reading the criticisms, by Dr. Arthur F. Hertz, of my recent small article on the Motor Functions of the Stomach. One ought to welcome criticism, but that of Dr. Hertz is based very largely on his own personal observations and interpretations of these, which one has yet to learn have been so widely accepted as he appears to imagine. His quotation of authorities (and manner of speech) would lead one to think that all of them are in agreement with him, and that all phenomena in connexion with this subject are simple, straightforward, easy to demonstrate, and further, that "Mr. Gray's" is the only dissentient voice, which is, however, negligible in that "Mr. Gray" is hopelessly behind the times! One knows that the quoted authorities do not agree on many points with Dr. Hertz, as I shall show in the case of some of them.

I should like to criticise his letter in return, paragraph by paragraph, because he has charged me with "numerous inaccuracies" and "mistakes"!

In the first paragraph he states that I ascribe, in papers published in 1908, "the discovery of secretin to Wertheimer, without even mentioning the names of Bayliss and Starling." The actual words in my first paper (Feb. 22nd, 1908) are "as Wertheimer and others have shown, acid in the duodenum excites the production of secretin." In the same paragraph of my paper an extensive quotation, duly ascribed to Starling, appears.

With regard to the second paragraph, *my* first observations on the human stomach with the X rays were made in the *vertical as well as* the horizontal position. If Dr. Hertz had taken the trouble to read *accurately* my second paper (July 25th, 1908) he would have seen this and been possibly prevented from hinting that I had been less thorough in my methods than he, seeing that his patients up till then

had been examined only in the horizontal posture. This is, however, a small matter! In spite of previously having read Dr. Hertz's paper, which he kindly sent to me, in which he gives "reasons in detail" for being convinced that there is no such thing as a "middle sphincter," I have yet to be convinced that there is not.

I shall next consider paragraph 5, in which Dr. Hertz expresses a wish to know the names of "recent radiographers and others" who "assert that the pylorus during gastric digestion descends naturally below and to the left of the umbilicus." In consideration of the possibility that Dr. Hertz has placed the names of his "recognised authorities" on the subject in what he estimates as order of merit, I am quite pleased to take the combined statements of the first two. Barclay (Proceedings of the Royal Society of Medicine, Electro-Therapeutical Section, February, 1909) says: "The whole organ is placed to the left and seldom transgresses the middle line except when it is full of food, and then only by half an inch or so. Its lower border is usually a little below the umbilicus in the upright position," and Pfahler (quoted by Dr. Hertz in his paper of July, 1910), and also Holzknecht, state that in their "normal" stomach the pylorus is the lowest point! It is but just to remark that Barclay says that it "was very exceptional to find the pylorus as the lowest point." If the two premier authorities of Dr. Hertz's list disagree in this way, whom are we to believe, especially as both disagree with Dr. Hertz?

Reverting to paragraphs 3 and 4, Dr. Hertz has evidently an idea differing from mine as to what is to be taken as the dividing line between the cardiac and pyloric portions of the stomach. I may say that my ideas have been based on the description given by the late Professor Cunningham, which is practically repeated by Dr. Hertz in his paper which was published so late as July, 1910. I stated in my papers that peristalsis occurs in the distal part of the cardiac portion, and this statement has been made by others—for example, some of Dr. Hertz's "recognised authorities." I shall be obliged if Dr. Hertz will quote any "recognised authority" other than himself to justify his remark that it is "now universally acknowledged (except by Mr. Gray) that there is no peristalsis in the cardiac end." It is pleasant to think that Dr. Hertz admits and figures in his paper of July, 1910, that a tonic contraction, sufficient to keep the walls of the empty stomach in close apposition, affects the whole of the stomach beyond the fundus, which is after all but a small part of the cardiac end. Why should peristalsis affect only a small part of this tonically contracted tube? I submit that my observations are supported by the anatomical findings of such an indubitably "recognised authority" as the late Professor Cunningham. So far as his other statements in these two paragraphs are concerned, I can only say that Dr. Hertz appears to have unbounded confidence in the infallibility of his own observations. If they are correct of course I am wrong.

In paragraph 6 Dr. Hertz asks, "Who are the 'recent radiographers' who say that 'carbohydrate food' begins to pass through the pylorus (displaced as described) in 15 to 20 minutes, and proteid in 30 to 45 minutes?" Again I seek to take an average, but quote, for accuracy, Dr. Hertz's first-mentioned "recognised authority"—viz., Barclay—he who says that "the whole organ is placed to the left," and therefore the pylorus must also be. Barclay says that carbohydrate food commences to pass "out of the stomach" in from 5 to 40 minutes. That is to say, he observes the passage of food through a sphincter which is evidently situated to the *left* of the midline. Dr. Hertz evidently agrees that the pylorus occupies its usually accepted position to the *right* of the middle line. Does it not appear reasonable to suggest that Barclay mistakes "the middle sphincter for the pylorus," and, further, that these are the times when food begins to pass through the middle sphincter? The statements made by Dr. Hertz in this paragraph, "that food, whatever its nature, begins to pass through the pylorus at once," is news! This may occur in infants, but all his "recognised authorities" differ from him, as well as do the previously recorded statements of Dr. Hertz himself. One supposes, of course, that Dr. Hertz speaks of ordinary *food*, not ordinary water or even albumin water. Are we to disregard all the work of physiologists, physicians, and even some surgeons with regard to the check action of the pylorus which has hitherto been regarded, under normal conditions, to require at least a little free hydrochloric acid before its sphincter action is unloosened?

In paragraph 7 Dr. Hertz again refers to Dr. Barclay (who places the pylorus in a wrong position) as confirming his own observations in connexion with duodenal ulcer. "The picture of a normal stomach exhibiting excessive peristalsis and passing the food on very rapidly is always suggestive of trouble in or about the duodenum." It is "universally acknowledged" (possibly there are exceptions) that hyperchlorhydria is a concomitant of ulcer, whether gastric or duodenal. Dr. Hertz agrees (in his paper of July, 1910) that hydrochloric acid is possibly the chief chemical stimulant of peristalsis, and there is little wonder that peristalsis should be excessive if the hydrochloric acid is excessive, but it has also been agreed that hydrochloric acid in marked excess stimulates pyloric spasm. I repeat, therefore, my remark that the interpretations of radiographers require criticism. One cannot allow that Dr. Barclay's observations confirm Dr. Hertz's when they differ on such an important point as the position of the pylorus.

With regard to Dr. Hertz's further remark, that he cannot understand how the period of relief of hunger pain is evidence in favour of a middle sphincter, I reply that it is to my mind just as much so as the relief of hunger pain of duodenal ulcer is evidence of pylorospasm. Destructive criticism, especially in the absence of confirmation, is easy—let Dr. Hertz give a reasonable explanation!

With regard to Dr. Hertz's remarks in paragraph 8, I may say that I have repeatedly seen intestinal segmentation, both as represented by the skiagraphic picture of the intestinal contents and also by direct vision of exposed human intestine. If Professor Cunningham's representation of the muscular coat of the stomach is correct I maintain that *modified* segmentation *is* possible in the part along the lesser curvature of the cardiac portion, and my observations in certain cases have led me to compare the passage of food masses along this part to the passage of segmented masses along the intestine. These may possibly be the same as the "blobs" referred to by Dr. Hertz and Dr. Barclay.

The literature on this subject is beset with so many contradictory statements that confirmation or criticism is urgently required. I shall be extremely glad if I stimulate others to take up the matter so that the truth may be arrived at as nearly as possible. As I indicated in my paper of Dec. 3rd, I shall not at all object to accept new views, but at present the ones I hold explain most easily and rationally clinical symptoms both before and after the operation of gastro-enterostomy.

I am, Sir, yours faithfully,

Aberdeen, Dec. 10th, 1910. H. M. W. GRAY.

THE USE OF "606."

To the Editor of THE LANCET.

SIR,—In view of the fact that the Ehrlich-Hata preparation, or "606," is now being put on the market, it is well to consider how far this preparation has fulfilled its expectations. That it has a rapid healing effect in certain cases appears definite, but the earlier reports of its wonderful effects were premature and probably exaggerated. The claim that it could effect an abortive cure of syphilis, or "sterilisatio magna," has not been substantiated. Professor Neisser, who was at first an ardent supporter of the new treatment, has since modified his opinion and recommends a combination with mercury and iodides. Professor Gaucher is anything but enthusiastic, and considers "606" only indicated in cases which resist mercurial treatment, but that such cases are rare. As regards the toxic effects of the drug, these appear to be less than those of atoxyl and arsacetin, but several deaths have occurred after injections of "606," some of which, if not entirely due to the drug, were probably hastened by it. Under these circumstances, it appears questionable whether we are justified in submitting patients, in the great majority of cases of syphilis, to treatment by "606," and perhaps losing valuable time by neglecting mercury and iodides.

I am, Sir, yours faithfully,

C. F. MARSHALL.

St. John's Wood Park, N.W., Dec. 10th, 1910.

TORONTO FREE HOSPITAL FOR CONSUMPTIVES AND THE KING EDWARD SANATORIUM FOR CONSUMPTIVES.

(FROM A SPECIAL CORRESPONDENT.)

THESE institutions, which are under the same control, are situated at a distance of four or five miles from Toronto, and the Free Hospital for Consumptives at the time of its establishment in the year 1904 was a somewhat new departure in therapeutics. The Muskoka sanatoriums for tuberculous patients, concerning which I wrote some few weeks ago,[1] were established for the treatment of those suffering from tuberculosis residing in any part of the province of Ontario, whereas the Toronto institutions are only for those afflicted with the disease who are residents of Toronto itself. Moreover, the especially distinguishing feature of the Toronto Free Hospital for Consumptives is that advanced, even far advanced, cases of tuberculosis are received—in fact, those cases that other hospitals refuse. It is a truism to state that in cities one of the chief causes of the spread of tuberculosis is infection from advanced cases. Persons with limited means are compelled to live in crowded houses and small, ill-ventilated rooms, by which the danger of infection is greatly increased. There is no doubt that if advanced cases could be strictly isolated tuberculosis in towns would not be nearly so rife as it is now. The Toronto Free Hospital for Consumption was the first institution established in this country for minimising the danger. By the courtesy of Mr. W. G. Gage, chairman of the board of directors, I was invited to visit the hospital, and accordingly travelled thither by street car. The first portion of the journey took me through a part of the factory district of Toronto, and I was greatly struck by the neat and even picturesque appearance of the factory buildings. These offered a complete contrast to the majority of such buildings on the outskirts of British cities, grimy unpleasant-looking places for the most part. The Toronto factories are housed in clean comfortable buildings, covered by creeping plants and with flowers at the windows. The latter part of the journey is through beautiful rural scenery, and the situation of the institutions themselves could scarcely be bettered. They are placed at a distance of perhaps half a mile from the main road, standing in grounds of 40 acres, on a plateau overlooking the lovely valley of the Humber.

The Free Hospital.

Regarding the buildings which constitute the Free Hospital, it must be understood that they are quite unambitious in design and architecture and seem to fit in with the scenery exactly. Their erection has been an example of making bricks without much straw. The original building was a farmhouse which has been added to as necessity or occasion demanded, and the result is seen in a rambling line of low buildings, mostly of wood. The farmhouse is now used for administrative purposes, and contains the offices of the medical attendants, dispensary, examination room, and rooms for the accommodation of the staff. Dr. W. J. Dobbie, physician-in-chief, was good enough to show me over the institution and to give me all the information asked for. The staff consists of the physician-in-chief and two assistant medical men, a lady superintendent, and about 20 nurses. The accommodation for patients is sufficient for 140, 100 or so being housed in the Free Hospital, while the King Edward Sanatorium will hold 38 patients. At the time of my visit the Free Hospital was practically full. Seventy inmates were able to get about to a greater or less extent, whilst 30 were entirely confined to their beds. The equipment of the hospital is adequate and thorough, and the latest scientific appliances are provided. The women are placed in the front of the building, and as far as is possible the fresh-air treatment is adhered to. Along the front of the hospital are wide verandah rooms, the glass shutters of which may be raised or lowered as the medical attendant may think fit. Fig. 1 represents women taking the fresh-air treatment in winter. The far advanced cases are confined to their beds in the upper storey, the majority of these having separate rooms. Men patients who have the disease in a less advanced stage live in shacks similar to those described in the article on the Muskoka Sanatoriums, these shacks being placed at the back of the main building at right angles to it at one side, the other side being occupied by nine old railway street cars; thus the main building, shacks, and street cars enclose a good-sized space which is utilised for garden purposes. Consequently there is no lack of air and light on all sides of the buildings. Each shack contains from six to eight beds with ample lavatory arrangements. The use of the old street cars was suggested both by motives of economy and convenience. They were presented by the Toronto Street Railway Company. Each makes an excellently cosy room and contains a bed, a stove, and some simple articles of furniture. The street cars are greatly in favour with the patients as places of abode, mainly, no doubt, on account of the comparative privacy ensured thereby. Fig. 2 represents the exteriors of the street-car homes. There are 12 children in the Free Hospital at the present time, for whom a schoolroom and teacher are provided. Dr. Dobbie is now having the large verandah at the end of the administration building fitted with glass shutters and equipped in such a manner that it may be used as an open-air schoolroom. It should be mentioned that the patients' beds are not placed close to the wall, for the reason that the floor on all sides of the bed may be the more easily cleaned. The spittoons provided are small flat tin boxes, in which are placed fairly tight-fitting boxes made of stiff moisture-proof paper. At regular intervals the inside boxes are removed and destroyed, thus doing away with the need for disinfecting the spittoons perpetually, while affording the opportunity for easily examining the sputum. The handkerchiefs used are made from soft, cheap cotton material, buttercloth in fact, and are destroyed after use.

The patients who can do light work are encouraged in this course. The ones who are able to be up are expected to make their own beds and to keep tidy their particular parts of the ward. To two men is given the duty of cutting the rolls of buttercloth into handkerchiefs, and to two women is given the duty of folding the serviettes for the table. Another patient burns daily the sputum-boxes. The experiment is being tried of placing the enclosed vegetable garden already referred to under the charge of patients. Indoor amusements are provided both for men and women.

During the past five years the statistics of treatment of *far advanced* cases has been as follows: apparently cured, none; disease arrested, 1; much improved, 42; stationary, 40; failed, 30; died, 282. The figures for the *advanced* cases during the past five years were as follows: apparently cured, 3; disease arrested, 21; much improved, 148; stationary, 60; failed, 20; died, 41.

As said before, the great benefit to the community at large in having advanced cases of tuberculosis carefully isolated is the main *raison d'être* of the hospital, and considered from this point of view its value has doubtless been incalculable. Towards the upkeep of the Free Hospital the city of Toronto subscribes the sum of 70 cents (3*s.*) per capita daily, and the provincial authorities make a further contribution of $3 (12*s.*) per week for each patient.

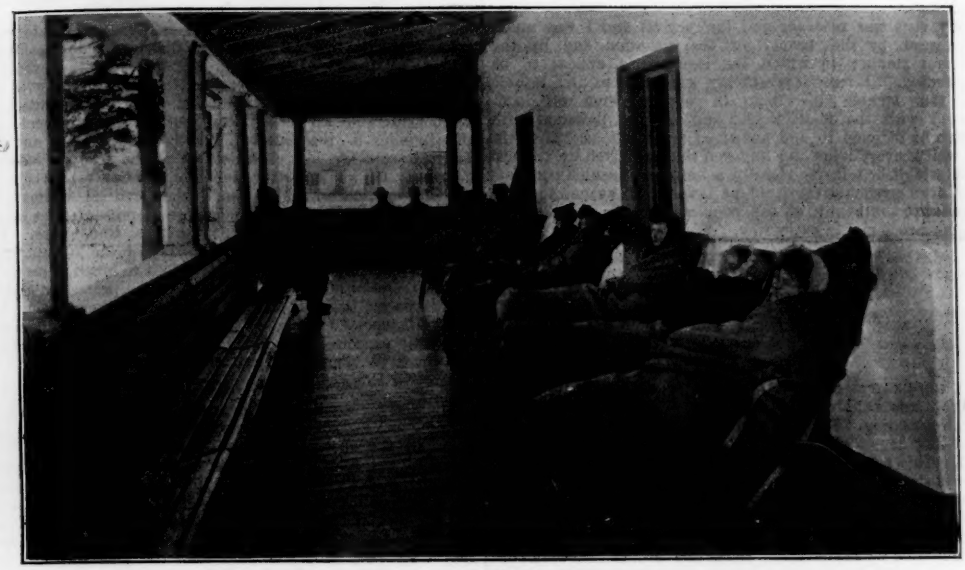
The King Edward Sanatorium.

The King Edward Sanatorium for Consumptives, which was opened to receive patients in September, 1907, is designed to care for tuberculous patients in the incipient and moderately advanced stages. The sanatorium buildings are situated some 300 yards from the Free Hospital buildings. The building which contains the administrative offices and rooms was the gift of the late H. C. Hammond of Toronto. The sanatorium itself, termed the Mulholland Building, was the gift of Robert Mulholland of Toronto. To this building is attached the dining-room building. The three buildings are connected by a covered corridor. The Mulholland Building is particularly handsome, well-built, and spacious; bathrooms are provided on each floor, and a wide verandah extends the whole length of the building on one side. There are also large sheltered balconies at each end of the building on the second floor. Provision has been made in the attic for a clinical laboratory and a room for microscopy. The ordinary patients at the sanatorium are required to pay 70 cents (3*s.*) a day, and a few private rooms are provided at $15 (£3) a week. On the second floor of the dining-room building are the sleeping rooms for the employees.

The water-supply is obtained from spring wells, pumped

[1] THE LANCET, Oct. 1st, 1910, p. 1041.

FIG. 1.



Wide verandah room, with glass shutters, in which women are taking the fresh air treatment in winter at the Toronto Free Hospital for Consumptives.

FIG. 2.

Old street cars utilised as rooms for men patients, with whom they are greatly in favour, at the Toronto Free Hospital for Consumptives. Each contains a bed, a stove, and some simple articles of furniture.

by windmill, electric motor, and compressed air. There is a complete septic-tank system for dealing with the sewage. Heating is by steam, with several open fire-places, and the lighting is by electricity. The physician-in-chief has a house in the grounds at some little distance from the hospital buildings.

My visit was pleasant and instructive, and I was much impressed by the beauty of the situation and by the efficient manner in which the institutions appear to be conducted. I must express my gratitude to Dr. Dobbie for the trouble he took in showing me all connected with the institutions, and for the patience with which he listened to and answered my questions. It would be well if every large city followed the lead given by Toronto and established in its vicinity a hospital in which poor far-advanced consumptives could be isolated, so as not to be a menace to the health of the population, while having their urgent needs met in every way.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

Research Defence Society.

A GENERAL meeting of the members of the Birmingham branch was held at the University on Dec. 2nd, Professor Leith presiding. Reporting on the past year, the President said they began with a membership of 109, and it was now 276. This number they hoped to increase considerably, and efforts should be made to induce working men, nurses, and others to become associate members. During the year they had received a very valuable gift from Lord Justice Fletcher Moulton—1900 copies of his evidence before the Royal Commission on Vivisection. Good use had been made of this as well as of other pamphlets in educating public opinion and obtaining members. Professor Frankland's public lecture on the Life of Pasteur had been very successful, and another public lecture would be given early next year. He proposed the adoption of the report. Mr. Gilbert Barling, in seconding, said that the branch were taking active steps to bring before the public the necessity for experimental work on animals and the benefits to be derived therefrom. Sir James Sawyer, in supporting the proposition, said that the branch had adopted the right attitude in that while they were firm in maintaining the benefits of research to medical science and practice, they did not aggressively oppose those who thought differently. They should be charitable towards them in their views, which were founded upon an insufficient appreciation of the underlying facts. Let them deal gently with those who needed conversion, and try by all the means in their power to bring about a right understanding of this great national question. Dr. J. Robertson, medical officer of health, who proposed the election of the officers, said as the holder of a licence some years ago he was aware of how much good resulted from research. He thought that nothing had given him a greater insight into certain aspects of disease than work in the laboratory. From the point of view of preventive medicine, nothing had given them so much inspiration, or had done the nation so much good, as work that had been stimulated by experiments made upon animals. Professor Leith was re-elected president; Alderman C. G. Beale and Sir George Kenrick vice-presidents; Dr. T. Shadick Higgins, treasurer; Mr. Chatwin, secretary; and Mrs. Gilbert Barling, Mrs. Godfrey Nettlefold, Mrs. Eric Carter, Mr. Gilbert Barling, Mr. Carey Gilson, Mr. A. S. Bennett, Mr. Wilson King, Mr. J. Furneaux Jordan, and Dr. W. H. Wynn, members of committee.

Annual Medical Dinner.

The annual dinner of the past and present students of the Birmingham Medical School was held at the Grand Hotel on Dec. 6th. Dr. T. Sydney Short presided; the vice-presidents were Dr. A. Stanley Barnes and Mr. B. J. Ward, and the honorary secretaries, Dr. C. E. Salt and Mr. R. A. Broderick. The principal guest was the Right Hon. Lord Ilkeston, P.C., consulting physician to the General Hospital. In proposing the toast of "The Medical School," Lord Ilkeston gave many interesting reminiscences of his work in connexion with the old Queen's College, whose staff he joined in 1861 as lecturer on anatomy. Among the other guests present were the Hon. Stephen Foster, recently appointed stipendiary magistrate in the city, and Sir Oliver Lodge. Musical items were contributed by Mr. J. R. Heath, Mr. B. A. Lloyd, and Dr. Browning. The attendance at the dinner was the largest for several years.

General Medical Practitioners' Union.

The annual smoking concert held on Dec. 2nd was largely attended by the medical men of the district. The President, Dr. H. W. Langley Browne, in the course of the evening, presented the general secretary, Mr. James Neal, with an illuminated address and a cabinet of plate in recognition of his considerable services to the profession. Mr. Neal was the founder of the General Practitioners' Union, and its general secretary, as well as editor of the *Midland Medical Journal*. He was a past-president of the Central division of the Birmingham branch of the British Medical Association, the representative of the branch at the representatives meeting, and a member of the Central Ethical Committee. He was also a member of the committee of the Birmingham Medical Institute. Few men have done so much to promote cordial relations between members of the profession and to create public spirit. Mr. Neal, in thanking members for their gift, spoke of the assistance he had received from many of them, especially Dr. G. J. Branson, Dr. W. T. Lydall, and Dr. E. W. Parsey, in promoting their common aims.

Birmingham Children's Remand Home.

The first children's court in this country was established in Birmingham in 1905; another considerable step has now been taken by the opening of a children's remand home. The site and building are the gift of Mr. and Mrs. Barrow Cadbury. It was desired that the building should have as little as possible the appearance of an "institution," and Messrs. Cosins, Peacock, and Bewlay have designed an attractive Georgian house. It was opened by the Lord Mayor on Dec. 9th, who said that the idea was that the house should be associated as little as possible with the police administration. The alternative to a remand home had been the workhouse. That was illogical. The board of guardians had homes of its own to which it sent children in order to keep them away from the workhouse; yet the magistrates had been remanding children to the workhouse. The authorities were very grateful to the donors, through whose generosity a great capital expenditure had been saved, and there would be no expense to the rates. The watch committee, however, had offered to contribute certain statutory sums per head for the maintenance of the children. Mr. Courtenay Lord, who presided, said that the Home Secretary had been approached, and it was pointed out that some steps were absolutely necessary in passing the Children Act to provide places to which children, offending or non-offending, could be sent during remand. The result was that under the Children Act remand homes became compulsory. The home was a model to the country, for it was the first to be properly organised and equipped.

Dec. 13th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

The Inebriates Acts in Scotland.

IN a report to the Secretary for Scotland, issued last week, the Inspector for Scotland under the Inebriates Act says that during the year ending Dec. 31st, 1909, there were in all nine institutions under his inspection, including three licensed retreats, five certified inebriate reformatories, and one State reformatory. The total number of persons dealt with during the year was 239, of whom 121 were retreat patients, and 118 reformatory patients. Compared with the returns of the previous year the institutions numbered one more, a new retreat having during the year received a licence, but the persons dealt with are 34 fewer, retreat patients being one less and reformatory inmates 33 fewer. These figures show that licensed retreats continue to be patronised by those seeking treatment in them to about the same extent as formerly, but that the reformatory treatment of the police-court drunkard is now being less seldom used.

Retiral of Sir Hector Cameron.

On the occasion of his retirement from the chair of clinical surgery in the University of Glasgow and from the staff of

the Western Infirmary, Sir Hector Cameron was last week entertained to dinner by his former assistants and house surgeons. The chair was occupied by Mr. A. Ernest Maylard, and Dr. Marshall, Dr. J. H. Nicoll, and Dr. Parry acted as croupiers. The company numbered upwards of 40. In proposing the toast of the evening, the chairman spoke of the admiration in which their guest had always been held by those who, like themselves, had been in some way associated with him. As a teacher and a leader in surgery they honoured him; as a man they loved and respected him; and they might justly say that everything he had said was worth listening to, and everything he had written was worth reading. Sir Hector Cameron was endowed with a wonderful memory, and they hoped he would long be spared to give to the profession "valuable material from his carefully garnered store." Sir Hector Cameron, in acknowledging the toast, made an interesting and felicitous reply. Dr. Joshua Ferguson, on behalf of the company, presented the guest with a loving cup, which bore the inscription: "H. C. C., Magistro Carissimo, Discipuli. MCMX." After Sir Hector Cameron had accepted the cup, the proceedings terminated with the singing of "Auld Lang Syne."

Day Nurseries in Dundee.

At the annual meeting in the town-hall, Dundee, on Dec. 5th, presided over by the Lord Provost, the good work done by the day nurseries in the city was recounted. The Rev. Thomas Best, in moving the adoption of the report and accounts for the year, said, when one thought of 30,000 admissions during the currency of a single year, and of what each admission meant in easing the burden of care from a mother's heart and mind, one felt that words were inadequate to give expression to what that implied. The report for the year showed that the mothers had contributed no less than £376 13*s.* 10*d.* 6752 penny dinners were sold during the year.

Rats and Plague in Dundee.

"Careful inquiries at the harbour and slaughter-houses reveal the fact that there is neither an undue prevalence of rats, nor any undue mortality amongst the rats in the city." This was reported by Dr. C. Templeman on Dec. 6th at a meeting of the public health committee. The investigation was made on account of a circular from the Local Government Board asking that investigations should be made into the condition and number of rats in the town.

Honour to an Orcadian Doctor.

On Dec. 1st Dr. David Suttie, who for the last 14 years has been medical officer to the Birsay, Hanay, and Sandwick Medical Aid Association, was presented with a purse of sovereigns in recognition of his faithful services. The occasion was Dr. Suttie's leaving for Glasgow, and Mrs. Suttie was also the recipient of a similar gift. Dr. Suttie, in replying, spoke of the kindness it had been his lot to receive, and stated that it was their intention to apply the money to the purchase of souvenirs to remind them of the happy years spent in an Orcadian home among a warm-hearted people.

Outbreak of Fire at the City Hospital, Aberdeen.

On Dec. 9th an alarming outbreak of fire occurred at the City Hospital, Aberdeen. The outbreak was first observed by a nurse about 9 o'clock, and the fire station was at once communicated with, while the doctor, matron, and nurses brought the chemical appliances into operation and kept the fire in check meantime. The fire arose in the basement of the administration block and was caused by a hot-water pipe setting fire to a beam, from whence it spread to the adjoining joisting, and but for the prompt action of the hospital staff would soon have obtained a firm hold. The damage, covered by insurance, is considerable. The patients were at no time in any danger.

Death of a Dundee Practitioner.

The death took place on Dec. 5th of Mr. Peter Steven, F.R.C.S. Edin., a well-known medical practitioner in Dundee. Mr. Steven was a native of Dundee, a son of the late James Steven, Rosebank, and after serving his apprenticeship with the late Dr. Cocks, a prominent ophthalmic surgeon in the city, he went to Glasgow, where he qualified in 1860. During his student days he made several trips to the Arctic regions in trawlers, and thus gained practical experience in a department of Dundee trade. He enjoyed a considerable general practice in Dundee, although devoting himself largely to surgical work. He died, aged 81 years, after a three weeks' illness.

Glasgow and Aberdeen Universities: Sir Henry Craik Returned Unopposed.

Sir Henry Craik has been returned unopposed as the Unionist Member for Glasgow and Aberdeen Universities.

Dec. 13th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Dublin Hospitals' Tuberculosis Committee.

THE quarterly meeting of this committee was held on Dec. 8th at 76, Grafton-street, Sir John Moore being in the chair. Her Excellency the Countess of Aberdeen, Dr. M. F. Cox, Dr. Herbert Byrne, Mr. O'C. J. Delahoyde, Dr. Frank Dunne, Dr. T. P. C. Kirkpatrick, Dr. J. F. O'Carroll, Dr. G. Peacocke, and the honorary secretary (Sir William J. Thompson) were present. The committee adopted the report of the subcommittee appointed to draw up a resolution with regard to the notification of tuberculosis. This report, which points out "that the detection and isolation of cases of pulmonary tuberculosis in all stages are necessary in the interests of the public health," was directed to be sent to the Local Government Board and also to the Presidents of the Royal College of Physicians and the Royal College of Surgeons. The good work which the nurses do amongst the consumptive poor of the city of Dublin is strikingly illustrated by the large proportion of patients who voluntarily ask for their services. During the nine months ended Nov. 19th, 353 cases of tuberculosis were attended by three district nurses, who paid 4719 visits. The poverty of the patients may be gathered from the statement that 155 families received nourishment, and 116 patients received gifts of clothes, shoes, and bedding. Lady Aberdeen reported that the P. F. Collier Tuberculosis Dispensary in Charles-street was fast approaching completion, and that early next year it would be ready and all arrangements made to commence work.

Association of Fellows of the Royal College of Surgeons in Ireland.

The inaugural dinner of the Association of Fellows of the Royal College of Surgeons in Ireland was held last Saturday night at the Gresham Hotel, Dublin, the President of the association, Lieutenant-Colonel F. G. Adye-Curran being in the chair. There was a fairly large attendance of Fellows and guests, and in the speeches attention was drawn to the disabilities under which Irish candidates suffer in regard to certain hospital appointments in England. The association has taken steps to record its protest against a condition which often appears in Irish advertisements of surgical vacancies—"Candidates must be Fellows of the Royal College of Surgeons in Ireland." The President stated that some of the members wished to enforce in Ireland the "Sinn Fein" policy of Ireland for the Irish, but with that view he had no sympathy.

Dublin Gas.

Last week a good many Dublin householders were annoyed by the presence of an unpleasant smell, and not unnaturally the condition of their drains became suspect. In many cases tests were applied to the drains. When this had gone on for a week or more it was announced on behalf of the gas company that owing to a defect in one of the gas purifiers a certain amount of sulphuretted hydrogen was present in the gas supplied to consumers. The amount must have been considerable, as one medical man reports the occurrence in his own case of unpleasant symptoms, such as headache and nausea.

Food for School Children.

On Dec. 12th a meeting was held at the Mansion House, Dublin, the Lord Mayor presiding, to promote the movement for the extension to Ireland of the Act making public provision for the feeding of necessitous school children, of whom there were a great number in Dublin. At present in some of the city parishes committees of ladies are working to provide meals for necessitous children, and pending

legislative change it is proposed to extend this voluntary organisation to the entire city.

Scarlet Fever in Belfast.

In Belfast there is at present an epidemic of scarlet fever, which—while so far it is of a mild type, with the exception of some toxic cases—is extremely widespread in its locale, cases being reported from every part of the city. In the municipal hospital at Purdysburn all the beds are full, there being 150 scarlet fever patients, and new cases have now to go to the union fever hospital. In some parts of the city, especially the south division, there is an outbreak also of measles; and cerebro-spinal meningitis has also been made notifiable for the year to the end of Dec. 1st, 1911, but, fortunately, the cases are very few in number. Since, and as a result of, the last serious outbreak of "spotted" fever several children have been admitted into the Ulster Institution for the Deaf and Dumb and the Blind with blindness and deafness.

The King Edward Memorial in Belfast.

The fourth list of subscriptions to the King Edward memorial in Belfast, which is to take the form of an additional block to the Royal Victoria Hospital, Belfast, was published on Dec. 10th, and brings the sum subscribed up to £14,789.

Irish Asylums.

The position of asylums in Ireland is becoming deplorable from want of room and of money. The Monaghan and Cavan asylum board at its meeting on Dec. 8th met specially to consider the problem of providing increased accommodation. The Inspector of Lunatics, in a long report dealing with the subject, points out that as estimated the accommodation is calculated by the latest official returns to be sufficient for only 793 patients, while the asylum is now over-crowded by 128. In the circumstances he says it is impossible to report to the Lord Lieutenant that the accommodation provided by the county councils of Cavan and Monaghan for the insane poor is sufficient. The report also pointed out the danger there was of His Excellency withdrawing the capitation grant in the circumstances. After a very long discussion it was unanimously decided that the military authorities should be communicated with in order to ascertain if the disused military barracks could be obtained for the purpose of an asylum. The inspectors and the asylum architect were also requested to visit these military barracks to see if they approved of the buildings and to report what they estimated as the cost of converting them into an asylum.—At the monthly meeting of the committee of management of the Tyrone and Fermanagh Asylum, held on Dec. 8th, the auditor reported that, in spite of the increase in the demand which was made last spring, the accounts closed this half-year heavily in debt, and although it was probable that this debit balance would be somewhat reduced by the end of the financial year, when the full increased rate had been received, still it would remain very considerable, and the committee, when considering the estimates for 1910–11, would have to make a further increase in the demand in order to put the accounts on a satisfactory basis.

Dec. 13th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Election of a Professor in the Faculty of Medicine.

THE council of the Paris Faculty of Medicine has elected a professor to occupy the chair of diseases of the nervous system, a position formerly held by Professor Raymond, and before his time adorned by Professor Charcot. There were two candidates, both of them being specialists and professors in the Faculty—namely, Dr. Dejerine, professor of medical pathology, and Dr. Pierre Marie, professor of pathological anatomy. The council elected Dr. Dejerine, who has done excellent work in diseases of the nervous system, has been an *agrégé* since 1886, and is 61 years of age. Another professorial appointment is probable, for the Municipal Council of Paris has been considering a proposal that a municipal chair should be created for Dr. Doyen. The high reputation which Dr. Doyen enjoys, not only in France but in various other countries, makes it unnecessary to do more than refer to the great ability which he has shown as an unofficial lecturer and teacher, and his promotion would obviously do credit to the initiative of the Municipal Council.

Treatment of Fractures of the Elbow in Children.

At a meeting of the Société de Médecine de Paris held on Nov. 26th, M. Barbarin made a communication on the subject of fractures of the elbow with displacement occurring in children. He said that in the majority of cases, when treatment by mobilisation did not give immediate good results, it was necessary to remove one or more of the fragments under the guidance of radiography, an operation which was soon followed by recovery or improvement. M. Mouchet said that he was in principle opposed to operations on the bones of the elbow or in fractures of that joint in children unless the lesions were either open or else attended with injury to the nerves. On several occasions (four times during the present year) he has had to operate on improperly reduced fractures of the external condyle and on supracondylar fractures. With respect to epitrochlear fractures, of which he had treated nearly 50, he had operated on only one in which the fragment was visible through a wound in the integument. Massage ought to be gentle in children suffering from fractures of the elbow, and obviously ought to be practised only at a distance from the seat of fracture. Mobilisation ought to be still more gentle; in some children it increased the stiffness. Some children had a predisposition to an excessive formation of osseous substance, an unexplained and unpreventable condition. M. Coudray remarked that the cases which had been described were important because they exemplified relatively rare fractures of the elbow. He agreed with the opinion of M. Mouchet that early operations were undesirable, because well-marked stiffness might either disappear or improve considerably in the course of some months. He thought that it was inadvisable to operate a second time on a child who had been examined and who would certainly regain the power of extending the joint. M. Durez said that it was not always necessary to employ massage in recent fractures, as these might be treated satisfactorily by mobilisation.

Fire at Branch Premises of the Pasteur Institute.

A terrible fire broke out on Dec. 7th at the branch premises of the Pasteur Institute between Garches and Marnes la Coquette. Beginning in a loft over the laboratories where serums are prepared and stored, it lasted the whole night and caused immense damage. The 60 horses which were in the stables were brought out, and 5000 boxes of serums were removed to a place of safety. On account of the destruction of the laboratories the director of the establishment at Garches cannot supply the quantity of serum required, but the preparation of it is being continued in a temporary laboratory which was made ready on the following day. It is fortunate that the stock of anti-diphtheritic serum was saved, as the replacement of it would require from three to four years.

Immunisation of Goats against Malta Fever.

At a meeting of the Biological Society held on Nov. 26th, M. Henri Vincent and M. Collignon communicated the results of attempts which they made to immunise four young goats against Malta fever; two of the goats were males and two were females; they were about six months old and in perfect health. Of the cultures which were used, one was supplied by M. Binot of the Pasteur Institute, and the other by M. Nicolle of Tunis, the latter of which, being the more virulent of the two, was used as a control test of the immunity that was produced. The antigen that was employed was prepared according to the principle made known by M. Vincent for the preparation of antityphoid serum, and the inoculations of it were made either under the skin or into a vein. Their experiments led M. Vincent and M. Collignon to believe that there was a prospect of practically immunising goats against Malta fever by several subcutaneous injections of cultures of the microbe of that disease sterilised by ether, which was a volatile antiseptic, easily manipulated and easily got rid of. Treated in this way the virus lost none of its efficiency for inoculation purposes and encouraged the production of antibodies almost as energetically as a living culture would. For the immunisation of animals this antigen was decidedly preferable to an attenuated living culture of the micrococcus melitensis, because a living culture, even after attenuation, might

transform the animals into germ carriers; it was also superior to cultures killed by heat. M. Vincent and M. Collignon considered that the inoculation of young goats against Malta fever would be the most efficacious means of preventing the alarming extension of that disease among goats and perhaps among other domestic animals, as well as among persons who came into contact with goats or were consumers of their milk and the cheese made from it.

Dec. 12th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Grants by Local Authorities in Aid of Medical Students.

A REMARKABLE step has been taken by some of the country magistrates for the purpose of obtaining a few years hence the services of medical men without much difficulty. As a large proportion of medical students come from families which have to practise economy, grants varying from 1000 to 1500 kronen (from £40 to £60) per year for five consecutive years, are offered to medical students who have passed the preliminary examinations in anatomy, physics, and chemistry. These young men must complete their curriculum within the ensuing three years, must spend a further period of two years in hospital work, and must sign a contract that they will take service with the country magistrates at the place allotted to them on the terms of appointment published for that place; this contract is to hold good for the next ten years after obtaining the diploma of M.D., which every practitioner in Austria must possess. It is necessary to explain that at present the remuneration for medical appointments in country places is so unsatisfactory that many of them are boycotted by the medical organisations, with the result that such posts are either vacant or heavy payments have to be made to private practitioners for the treatment of paupers and similar medical work. As the only object of this new scheme is to induce inexperienced students to sign contracts which would in a short time hand them over to the mercy of the country magistrates, to be sent wherever their employers pleased, medical students are being warned against it by the Medical Council. There is no reliable means of ascertaining whether any, and if so how many, of such agreements have been signed, but it is believed that the number is very small. A similar method has been already adopted by the military authorities to secure the services of medical men for the army and militia. Medical students were, and are still, offered the sum of 12,000 kronen (£500), to be paid in instalments increasing from £50 to £80 a year during their curriculum, and the rest on entering the army, where they must serve for 10 years. It is found, however, that even this not insignificant financial help has failed to solve the problem of the chronic shortage of army medical officers, owing to the unsatisfactory social and educational opportunities of the army medical service.

A New Water-supply for Vienna.

On Dec. 2nd the sixty-second anniversary of the Emperor's accession, His Majesty opened the grand new waterworks. This great undertaking has been completed within ten years, and its importance may be gauged by the fact that it not only doubles the amount of water supplied to this city of 2,000,000 inhabitants, but will no doubt prevent a water famine, at least until the year 1940, when the population will, it is computed, be doubled. The water is collected in the Styrian Alps, a mountain range a little over 6000 feet high, at a distance of some 120 miles from the capital in a south-westerly direction. 20 per cent. of the water comes from seven large mountain lakes and the rest from springs and wells in this area; it is brought in huge pipes, aqueducts, and syphons to the city, where it is capable of reaching the highest spot, even in the hilly portion of the suburb, without any lifting apparatus, owing to the great height from which it comes. The daily quantity flowing into the reservoirs is nearly constant both summer and winter, and amounts to 250,000 tons of pure drinking water. To this must be added the supply coming from the old waterworks, which derive their water from the springs around and on the Schneeberg, a range of snow-covered mountains also about 6000 feet in height. This yields an almost equal supply per head per day for Vienna. Last winter, when abnormal weather conditions had been prevailing for nearly half a year and a prolonged drought had emptied the reservoirs, the city experienced a serious water famine, as the supply had fallen below 100,000 tons per day, and the water-pipes in the houses had to be throttled to prevent undue use of the precious liquid. The new water is of excellent quality. It has a fairly constant temperature varying from 6° to 10° C. Its softness makes it well suited for washing, cooking, and other household requirements, but is not so marked as to interfere with its use as a beverage. The mineral constituents are chiefly carbonate of lime with a little phosphate; there are also traces of magnesia, and in summer-time traces of silicates have been found; it contains no organic admixture, and there are very few germs. Care has, of course, been taken to prevent any possible contamination or pollution in the catchment area, and the water will be analysed every week in the municipal laboratory. The cost of the work amounts to 100 million kronen (over £4,000,000), and a small charge (about 1 per cent. of the rent) has to be paid by the occupants of flats and houses for the outlay. Vienna can now boast of having the most plentiful and best water-supply of any capital city in the world, and perhaps of any city in Europe.

The Proposed New Regulations for the Management of Hospitals.

The professors of the Vienna medical institutes, composing the Medical Faculty of the University of Vienna, have held a meeting in order to protest against the insidious plan of bringing the clinics under the influence of political parties as described in this column on Dec. 3rd, p. 1655. At this meeting vehement opposition was directed against two points which are considered to be extremely objectionable—namely, the administration of hospitals by non-medical men and the whole-time appointment of the hospital staff. A committee, consisting of the present dean of the faculty and the three previous holders of this office, as well as of the presidents of the "Association of the Hospital Medical Men," and the "Organisation" was at once despatched to the Ministry of Education, the Ministry of Finance, and to the Home Secretary to explain the views held by the professors, the committee being authorised to inform the Ministers that all the clinical professors were prepared to resign their posts at once if the scheme should become law, as they could not take part in ruining the profession. As a result, the plan may be considered as dropped, at least in its original shape. Whatever is good in the scheme will no doubt be brought out at another occasion.

Dec. 12th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

The St. John Ambulance Association.

THE Government of India has placed the Indian branch of the St. John Ambulance Association on the list of institutions in India receiving an annual Government subsidy. The Government grant to the association is meant to signify the highest official approval of the remarkable extension of the humanitarian work of the association amongst the people of India during the past two years. It is not designed to relieve private individuals of their responsibility to the branch, and it is hoped that numerous chiefs and leading Indians will follow the generous example of His Highness the Nizam, who, in addition to maintaining a flourishing centre in his dominions, has recently made a handsome donation to the central fund of the association.

The Bombay Hospitals.

The annual report by Surgeon-General H. W. Stevenson, I.M.S., Surgeon-General to the Government of Bombay, on the civil hospitals and dispensaries of the Bombay Presidency for the year 1909, which has just been issued, states that during the year the number of hospitals and dispensaries increased from 718 to 723. The total number of patients, both indoor and outdoor, treated during the year was 2,250,211, or 47,270 more than in the previous year. The percentage of mortality was 9·8, practically the same as that of last year. Of the 2,250,211 patients treated, 13,098 were Europeans and

Eurasians, 1,422,600 were Hindus, 682,344 were Mussulmans, and 132,169 belonged to other classes. The number of adult females formed 20·8 per cent. of the total treated. Analysis of the numbers treated under the different diseases shows no marked increase, except under the head of cholera, in which case the numbers rose from 208 to 2347. The disease chiefly prevailed in the Deccan, and its spread was largely due to the Sinhast pilgrimage at Nassik. Tuberculosis shows an increase of 102. Under leprosy the cases treated fell from 4012 in 1908 to 1961. Malarial fevers show a decrease of 5366 cases, but still supply 18·54 per cent. of the total number treated. The total income was Rs. 17,69,358, and the expenditure Rs. 17,46,758. The average cost of the dieting of each patient during their stay in hospital was Rs. 0 2-10, as compared with Rs. 0 2-11 in the previous year. The report comments on the inadequacy of medical relief in different parts of the country, and the announcement is made that in order to meet this need a scheme for the establishment of a number of additional dispensaries is receiving the attention of Government. The scheme, it is stated, is almost completed.

H.H. the Maharaja of Patiala.

The generous gift of H.H. the Maharaja of Patiala to the King Edward Sanatorium for Consumptives at Dharampur, alluded to by the Lieutenant-Governor of the Punjab at the recent installation of His Highness to full reigning powers at Patiala, amounts to a lakh of rupees. His Highness has further undertaken to provide an up-to-date dispensary and has made a fresh grant of pine-covered land. At Dharampur steps are being taken to build a hostel where students and young persons generally who are run down may be enabled to ward off the encroachments of the disease which is working such havoc amongst them.

Presentations to an Indian Medical Officer.

On his departure from Bombay for Europe Lieutenant-Colonel H. P. Dimmock, Principal of Grant Medical College, senior medical officer of Jamsetjee Jeejeebhoy Hospital, and physician-in-charge of Bai Motlibai and Sir Dinshaw Maneckji Petit Hospitals for Women and Children, Bombay, who has held the above posts conjointly since 1903, has been the recipient of a number of valedictory addresses. These included: (1) from the medical and subordinate staffs, an address in silver casket; (2) address and presentation from the nursing staff of the hospitals under his charge; (3) a presentation portrait of himself subscribed for by the students; (4) an address from the military medical students; (5) an address in silver casket from the student gymkhana; and (6) an address from the native staffs.

Nov. 19th.

NOTES FROM CHINA.

(FROM OUR OWN CORRESPONDENT.)

The Anti-opium Societies and the Chino-Indian Agreement.

A GREAT many home papers contain accounts of meetings held by anti-opium societies at which resolutions are carried unanimously calling upon the Government to cut short its agreement with China by totally suppressing the Indian export of opium without further delay. The following considerations are well worthy the attention of anti-opium societies who, in the opinion of competent authorities in China who are studying the question on the spot, are doing much to hamper the British Government in its good work, and probably to thwart the proper working out of a scheme which has been acknowledged by China to promise the best means of thorough abolition. For the agreement come to is a sound one. It was seen by both parties that the speedy and total abolition of such a widespread habit is impossible. Therefore it aims at a *pari passu* diminution of the Indian trade and the home production in China. Should the Indian trade be forthwith stopped there is no possible hold on the Chinese to annually diminish their trade. There are at the present moment hundreds of thousands of Chinese who would resume the habit the moment any restrictions are removed. This agreement made by the two Governments has entirely altered the situation. The efforts of every anti-opiumist should now be directed to seeing that it is loyally carried out; interference with it can only be perilous. The sincerity of the Indian Government is unquestionable; the sincerity of China may be more open to question, though for my own part I am convinced of it. The ability of the Indian Government to carry out its promises is undoubted; it has absolute control of the production and of the export trade. The ability of China to accomplish this herculean task to which she has pledged her honour, and to which she has set her hand, is quite another matter. It should be remembered that opium is imported from Persia, Annam, Dutch Colonies, and other places besides India, and that China has no efficient preventive service along her thousands of miles of coast line. The amount of opium grown in China is over 360,000 piculs, while only 40,000 piculs are imported from India. The production of opium is in private hands, scattered over several provinces, and, as has been proved in Shansi, can only be controlled with difficulty at the best, and in the course of several years. In other places, for various reasons, there is far less progress. The fact is that the machinery for effective control, as for effective taxation of the native product, does not exist. Public opinion will do more than anything else, and the present agreement (possibly modified in one or two details) has a real value in keeping up the pressure of public opinion. It is a good help to the genuine anti-opium movement in China. In the name of common sense and of the cause we all have at heart, it is best not to interfere from outside to cut off the pressure which the agreement brings to bear on the officials and people of the provinces where at present the anti-opium movement is weakest. That there is plenty of scope nearer home for the activities of anti-opium societies in the direction of limiting the export of morphine, &c., from England to China is shown by the following resolution put by the Hon. Mr. M. Stewart at the Hong-Kong Legislative Council:—

> That this council desires respectfully to draw the attention of the Secretary of State for the Colonies to the port of origin of all the morphine, and one-third of the compounds of opium, entering this colony; and humbly prays him to lay before Parliament the propriety of assisting this Government in its endeavours to discourage the opium vice in its most injurious form by restricting the export from England of the means of gratifying it.

In the Memorandum on opium published in 1909 by the Statistical Department of the Chinese Imperial Maritime Customs the Commissioner of Customs at Foochow wrote as follows:—

> Prior to 1902 and the increase of duty on morphia the recorded importation at Foochow averaged 2700 ounces per annum. During the following three years only eight ounces were imported, and since 1905 none whatever has been declared at the Customs. There is reason to believe that large quantities are smuggled in along the coast in junks from Formosa and into the open ports by steamers from Hong-Kong. The consumption of the drug is reported to be just as great as ever. Upwards of thirty medicine shops at Foochow deal openly in morphia, and some of these are believed to carry stocks of as much as 1000 ounces. Most of the bottles bear the labels of British firms. Instruments for subcutaneous injection are also found, but are not in great demand.

These two quotations should give the home societies something to think about.

Appearance of Human Plague at Shanghai.

Following several suspected deaths the corpse of a Chinese was discovered by the municipal health authorities and material taken from a bubo was found to contain virulent plague bacilli. The day after this discovery two more cases were found which were verified as plague and which succumbed to it, making a total of three deaths. The acting medical officer of health, Dr. A. Moore, therefore declared the subdistrict to be plague-infected and ordered all the houses in it to be visited daily and all plague and suspected cases to be removed, compulsorily if need be, to the isolation hospital and all contacts to segregation quarters. Although there are many enlightened natives who view with appreciation the steps taken to prevent the plague obtaining a foothold in the settlement, there have been many wild rumours among the lower classes who resented the house-to-house visitation. Finally a riot broke out, necessitating the calling out of the volunteers to assist the municipal police in keeping the hostile Chinese in check. Several of the rioters were wounded as well as a few foreigners, but order has now been restored and the Chinese authorities are doing their best to coöperate with the police by appeasing the populace. The former have issued proclamations and called meetings to explain the situation. It is now confidently expected that the measures taken will permit the routine work of disinfection and supervision to be carried on as before.

Peking, Nov. 20th.

AUSTRALIA.

(FROM OUR OWN CORRESPONDENT.)

Talbot Milk Institute.

THIS undertaking, which was founded on the initiative of Lady Talbot for the provision of fresh milk to the poor of Melbourne, recently applied to the Government for financial assistance. The Premier appointed Dr. Foske and Mr. Weldon, a civil servant, as a special board to inquire into the management of the institution, and these gentlemen presented a strongly condemnatory report, in which, *inter alia*, they wrote: "As the result of the inquiry we are of the opinion that the work of the institute has been unsatisfactory and unduly expensive, and therefore does not justify the continuance of Government support. We consider that the institute is unnecessary, and regard it as an example of how this community has charitable institutions foisted upon it to do certain necessary work that can more easily and effectively be undertaken by existing bodies. We therefore recommend that the request for a further grant be not acceded to." As the committee of management includes almost all the leading children's specialists and many prominent health officials and university teachers in veterinary science, this report naturally created a sensation, and has formed a subject of newspaper correspondence. The two morning newspapers took opposite views, the *Argus* upholding the institute and the *Age* supporting the adverse comment. After the first excitement subsided there appeared to be two points calling for reply from the Talbot committee. One was an allegation made in the critical report that "no record was kept of the number of children supplied nor any particulars concerning them, so that it was impossible to prepare mortality or other statistics or arrive at the cost per head." The other was the opinion that the municipalities could do the work more cheaply and efficiently than the Talbot Institute. After consideration for nearly a month the committee have published a lengthy reply to the adverse comment. They say: "In the portions of Melbourne where the Talbot milk has been supplied during the past two summers there has been a uniform and striking fall in the infantile death-rate." It must be confessed the committee does not produce any convincing figures in support of such a statement. As to the alleged excessive cost, the committee claim that the supply of ice-chests and ice to parents, nursing and other supervision has swelled the total, but is inseparable from any scheme of the kind. They further remark as to the board of inquiry: "Its report should be regarded merely in the light of an *ex parte* and unreliable statement of two persons who appear to consider they hold a brief against the institute, and its conclusions should be considered merely as the verdict which these persons were endeavouring to secure." Members of the institute committee attended at Parliament House and addressed some members of the House on the question. Pressure is being brought to bear on the Premier, and it is probable some advance will be made pending a further inquiry into the working of the institute.

Health of Melbourne.

The annual report of the city health officer for 1909 gives the death-rate at 13·6 per 1000, or, deducting benevolent asylum figures, 12·4 per 1000. This rate shows a continuous decline since 1886. The birth-rate was 22·5 per 1000 and the infant mortality-rate 98 per 1000. Diphtheria and scarlet fever were unusually prevalent, and the Infectious Diseases Hospital was severely taxed for accommodation.

Hospital Sunday.

The annual Hospital Saturday and Sunday collections were taken up on Oct. 22nd and 23rd in Melbourne. The total exceeded that of any year except 1888, which was the "boom" time, being then over £9000. This year's total was £8119, but with some further sums to come may reach a larger figure.

West Australian University.

A Royal Commission appointed to inquire into the feasibility of a university for West Australia has reported to Parliament and recommends: 1. The establishment of the university without delay. 2. The type to conform to that of the Eastern States, but with any modern amendments necessary. 3. Both sexes to have equal rights and facilities. 4. The commission favours free tuition, but if fees are necessary to be as low as possible. 5. Faculties to be formed in arts, science, law, and perhaps music, and at a later stage medicine and surgery.

Medico-Legal Case.

Some time ago a young woman was found dead in the house of a Chinese herbalist in Ballarat. The herbalist himself called the police, and his statement was that the deceased came to consult him and died while he was making up a medicine. Deceased was in a certain condition and evidence was given that she was aware of the fact and went to the house for a certain purpose. The medical man who made the post-mortem examination is of opinion deceased died from the entry of air into the veins, and in this he is supported by two other local colleagues. The Government pathologist, who made a subsequent necropsy, is of opinion that death was due to shock. At the first trial the jury disagreed on the charge of murder preferred against the herbalist. At the second trial additional medical evidence is to be called on both sides.

Obituary.

Mr. H. J. H. Scott of Scone, New South Wales, died recently from enteric fever. He was a well-known cricketer in his earlier days, and captained the Australian eleven which visited England in 1886. Two years subsequently he qualified as L.R.C.P. and M.R.C.S. Eng., and returning to Australia practised his profession at Scone, where he was greatly esteemed, as was evidenced by an immense gathering of the public to attend the funeral. Mr. Scott was only in his fifty-first year at the time of his death.

Nov. 15th.

Obituary.

WILLIAM HENRY HORROCKS, M.B. LOND., F.R.C.S. ENG., L.S.A.,

SENIOR HONORARY SURGEON, BRADFORD ROYAL INFIRMARY.

IN the death of Mr. W. H. Horrocks at the early age of 53 years Bradford has sustained a severe loss. He was universally respected and had a high reputation in the city and surrounding country. In a quiet way he exerted considerable influence, and by always maintaining a high standard of conduct in all that he did he upheld the honour of the profession in the city of his adoption.

Mr. Horrocks was the second son of the late Dr. W. H. Horrocks of Blundellsands, Liverpool, and was born on June 18th, 1857. He received his medical training at University College, Liverpool, the Owens College, Manchester, and University College Hospital, London, taking the M.R.C.S. Eng. in 1882 and L.S.A. in 1883. In 1886 he took the M.B. of the University of London, and the Fellowship of the Royal College of Surgeons of England. After qualifying he held a resident post in the Rotunda Hospital, Dublin, and then served for three years first as ambulance surgeon and later as house surgeon in the Northern Hospital, Liverpool, after which he returned for a year to London to act as assistant demonstrator of anatomy at University College. He then went to Bradford as house surgeon to the Royal Infirmary, holding the appointment for nearly three years and resigning it to enter into partnership with Dr. A. C. F. Rabagliati. After a few years the partnership was dissolved, but the close personal friendship remained. In 1891, on a vacancy occurring at the Royal Infirmary, he was appointed honorary assistant surgeon, and in the following year was elected to the full staff, being at the time of his death senior surgeon to the institution. His zeal for surgery, his thorough training, and his abilities enabled him, despite his delicate physique, to rise to the position of a consultant whose advice was frequently sought by his brother practitioners in Bradford and the surrounding districts. Though never entirely relinquishing his family practice, he was yet so loyal and considerate to both patients and doctors that his consulting work steadily increased, and at the time of his death was considerable. On his appointment as surgeon to the infirmary he at once threw himself with zeal into the work, and the institution owes a great debt to his energy and ability. He took a great interest in the management of the hospital and especially in the training of the nurses, always being at pains to point out to them anything in the cases which had a bearing upon their work. He

wrote many papers in the medical journals, but these do not represent a tithe of those he read before the local medical societies. He acted as medical referee under the Workmen's Compensation Act.

The medical profession in Bradford has, in short, by the death of Mr. Horrocks, lost an able diagnostician, a capable surgeon, and a true friend whose place will not easily be filled. Such honours as the local profession had to bestow were conferred on him. He was chairman of the Bradford division of the British Medical Association and President of the Bradford Medico-Chirurgical Society, and how great were the respect and esteem in which he was held was shown during his last illness by the constant inquiries that were made concerning him, and at his funeral by the very large gathering of medical men that assembled to do him honour.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—As the result of the examination held on Nov. 17th, 21st, 22nd, 23rd, 24th, and 25th, for which 67 candidates presented themselves, of whom 26 were approved and 41 were referred, the Council conferred the diploma of Fellow on the under-mentioned gentlemen at their meeting on Dec. 8th. Two gentlemen, Ernest Marshall Cowell, of University College, and Anandrai Keshavlal Dalal, of Bombay University and Middlesex Hospital, who were among the successful candidates, were not eligible to receive the diploma on account of their not having reached the requisite age of 25 years. The following is a list of the successful candidates:—

Thomas Gerald Fenton, M.R.C.S., L.R.C.P., St. Thomas's and St. Bartholomew's Hospitals; Krishna Moreshwar Pardhy, L.M.S. Bombay, M.R.C.S., L.R.C.P., Bombay University, University College Hospital, and Birmingham University; William Bradshaw Ainger, M.R.C.S., L.R.C.P., St. Bartholomew's Hospital; Ernest Edgar Maples, M.D., B.S. Lond., M.R.C.S., L.R.C.P., St. Bartholomew's and St. Thomas's Hospitals; George Ernest Oswald Fenwick, M.R.C.S., L.R.C.P., University College and St. Bartholomew's Hospital; Gordon Wilson Thomas, M.B., B.S. Lond. M.R.C.S., L.R.C.P., Leeds University; James Montagu Wyatt, M.R.C.S., L.R.C.P., St. Thomas's Hospital; Edwin Thomas Harries Davies, M.D., M.S. Lond., M.R.C.S., L.R.C.P., St. Mary's Hospital; John Black Ferguson Wilson, M.B., B.S. Lond., M.R.C.S., L.R.C.P., Leeds University and London Hospital; Charles Walter Gordon Bryan, M.R.C.S., L.R.C.P., St. Mary's Hospital; James Barlow Macalpine, M.B., Ch.B. Manchester, M.R.C.S., L.R.C.P., Manchester University and London Hospital; Paul Jenner Verrall, M.B., B.C. Cantab., M.R.C.S., L.R.C.P., Cambridge University and St. Bartholomew's Hospital; Alfred Richardson, M.B., B.S. Lond., M.R.C.S., L.R.C.P., Leeds University; Harry Blakeway, M.B., B.S., B.Sc. Lond., M.R.C.S., L.R.C.P., St. Bartholomew's Hospital; Harold Delf Gillies, B.A. Cantab., M.R.C.S., L.R.C.P., Cambridge University and St. Bartholomew's Hospital; Edward Leslie Martyn Lobb, M.B., B.S. Lond., M.R.C.S., L.R.C.P., Guy's Hospital; Harold Chapple, M.A., B.C. Cantab., M.R.C.S., L.R.C.P., Cambridge University and Guy's Hospital; Murugesem Muthu Kumarasamy, M.R.C.S., L.R.C.P., Madras, Edinburgh University, and University College Hospital; John Francis O'Malley, L.R.C.P. & S.I., M.R.C.S., L.R.C.P., Dublin University and London Hospital; Edward Mapother, M.D., B.S. Lond., University College Hospital; Charles Aubrey Pannett, M.D., B.S., B.Sc. Lond., St. Mary's Hospital; Robert Nuttall Porter, M.B., Ch.B. Vict., Manchester University and London Hospital; Balcombe Quick, M.B., B.S. Melbourne, Melbourne University and London Hospital; Paul Bernard Roth, M.B., Ch.B. Aberdeen, Aberdeen University and London Hospital.

Licences to practise dentistry were conferred upon the following 42 gentlemen who have passed the requisite examinations and complied with the by-laws:—

Albert Frederick Bangert, Middlesex and Royal Dental Hospitals; Charles Holme Barnett, Guy's Hospital; Robert Dudley Bell, Sydney Martin Bell, Harold Edgar Bower, and Ralph Chapman, Charing Cross and Royal Dental Hospitals; Charles Repton Faulkner, Birmingham University; Thomas Leonard Fiddick, Guy's Hospital; Guy Leroy Gillett, D.D.S. Michigan, Michigan University and Middlesex Hospital; Frederick Simpson Glover, Guy's Hospital; John Ferguson Gow and Norman Grellier, Charing Cross and Royal Dental Hospitals; Laurence Edgar Crespine Harrison, Middlesex and National Dental Hospitals; Clement John Henry, Guy's Hospital; Albert Henry Herbert, Birmingham University; Clement Eugene Holburn, Sheffield and Durham Universities; Arthur Percy Livett Johnson, Guy's Hospital; Bertram Howard Jones, Middlesex and National Dental Hospitals; William Joseph Kennealy, Guy's Hospital; Harold William Knowling, Liverpool University; Edward Aubrey Clement Knox-Davies, Guy's Hospital; William Stuart Lang, Middlesex and National Dental Hospitals; Stanley Lawson, Guy's Hospital; Frederic Winbolt Lewis, Middlesex and Royal Dental Hospitals; Harris Raphael Lyons and Leslie Miller, Charing Cross and Royal Dental Hospitals; Arthur Stanley Morgan, Guy's Hospital; Victor Mayfield Morris, Middlesex and National Dental Hospitals; Charles Harry Greville Penny, Guy's Hospital; Fred Quayle, Middlesex and Royal Dental Hospitals; Charleton Edmund Rice, Guy's Hospital; Gordon Evelyn Rowstron, Guy's Hospital; Harry Stobie, St. Thomas's and Royal Dental Hospitals; Patrick Barry Stoner, Harry Sturton, and Ernest Sutton Tait, Guy's Hospital; Claude Taylor, Charing Cross and Royal Dental Hospitals; William Jefferson Wilkinson, D.D.S. Pennsylvania, Pennsylvania University and Royal Dental Hospital; Frederick Charles Willows, Bristol University; Thomas Edwin Wills, Charing Cross and Royal Dental Hospitals; and William Hector Wotton and Edgar Olyve Yerbury, Guy's Hospital.

LITERARY INTELLIGENCE.—Messrs. Merser and Sons (268–270, Kennington-road) will shortly publish an English translation of the well-known work of Professor Mosso, "La Paura," in which the great Italian biologist explains his views of the etiology, physiology, and pathology of fear. The translation has been made by Dr. Arthur Harrison, a former student of King's College, London, and a late member of the Indian Medical Department, who, after much active service, had to retire on account of advanced organic heart disease; and we bring this work to the notice of the medical profession with a trust that its success will materially help one "to whom fortune has been rather niggardly in her gifts," as the publishers' announcement says. The book will be published at 5*s.* net, and advanced subscriptions will be received and acknowledged at the place of publication.

CHOLERA IN MADEIRA.—The cholera has spread considerably in Madeira, and there has unfortunately been some rioting. Our correspondent last week complained of the supineness of the Lisbon authorities, and the attitude of the Portuguese Government is still apathetic. Local endeavour, strenuous as it is, may not suffice to keep the epidemic in check. The Board of Trade is in receipt through the Foreign Office of information to the effect that persons desirous of sending provisions to relatives in Madeira can secure their admission into the island without Customs examination until the end of January on condition that the packages or cases containing the provisions are accompanied by a certificate from the Portuguese Consul-General in London stating fully the nature and value of the contents. Consular stamps must be attached to each package or case.

ANNUAL DINNER OF THE BRISTOL MEDICAL SCHOOL.—Over a hundred past and present students of the Bristol Medical School met on Nov. 29th, at the annual dinner, which was presided over by Mr. James Taylor. The health of the guest of the evening, Sir Alfred Keogh, was proposed by Captain A. E. Hayward Pinch, I.M.S., an old Bristol student, who spoke enthusiastically of Sir Alfred Keogh's work in connexion with the Royal Army Medical Corps. Sir Alfred Keogh, in reply, said that the reforms had been based on two principles—the attainment of professional efficiency and complete fusion of the military and medical elements. That these objects were achieved was due to the support which he received from the great majority of the corps itself. In proposing "The Medical School and other Departments of Bristol University," he spoke of the debt which tropical medicine owed to the work of Dr. William Budd of Bristol, and alluded to the valuable help which he had received in the organisation of the Territorial Medical Service from Major Thurston, R.A.M.C., another former Bristol student. Sir Alfred Keogh made some very interesting remarks on the part which the modern English Universities are destined to play in the satisfaction of the thirst for knowledge shown to so great an extent by the younger members of the working-classes, and on the influence which this generalisation of higher education would have in rendering British industry and commerce more scientific, and therefore more efficient. In conclusion he pleaded for more attention to physiology and pathology in the medical curriculum. Mr. F. Richardson Cross, who replied on behalf of the medical school, gave a brief outline of its history, and asked the students to set a higher standard of behaviour than that observed at the recent graduation ceremony. The Rev. de Lacy O'Leary, in replying for the other faculties, said that they had much to learn from the Faculty of Medicine as to the value of post-graduate study. To the toast of "Past and Present Students," proposed by Dr. W. H. C. Newnham, Mr. G. Munro Smith and Mr. R. F. Bolt replied in admirable speeches. The former laid stress on the work of the Association of Alumni, which has for one of its aims the compilation of a record of the careers of all former students at the University; and Mr. Bolt gave an excellent account of the progress of the University Union

and the various sporting and other interests which have prospered under its care. Dr. de Burgh Birch, professor of physiology in the University of Leeds and an old Bristol student, proposed the health of the President, to which Mr. Taylor briefly replied. The menu "card" deserves mention. The dinner secretaries try to find a new form for it each year, and this time hit upon the happy notion of enclosing it within a pill-box labelled the "Bristol Medical Dinner Pill—to be taken once yearly."

KING EDWARD'S HOSPITAL FUND FOR LONDON.—The Governors and General Council of this Fund have placed this year the sum of £150,000 in the hands of the committee for distribution among the London hospitals. We shall deal further with the awards.

UNFORTUNATE ADVERTISEMENT. — Numerous advertisements of a forthcoming book by Mr. H. C. Ross on cell-reproduction have been sent to the lay press. The advertisements were not in any way dictated or inspired by the author, and have been published without his authority or knowledge to the regret of himself and the publisher.

THE COTTAGE BENEFIT NURSING ASSOCIATION.—A meeting of this association was held on Dec. 13th, at Denison House, Vauxhall Bridge-road, under the presidency of the Rev. John Harding. The report, which was read by the secretary, showed that the work of the year had been very satisfactory. Dr. Alfred Cox, in the absence of Mr. J. Smith Whitaker, read a paper on the Midwives (No. 2) Bill. He said that the medical profession fully recognised the work of the nurse; there was, however, a tendency on the part of some nurses to encroach on the work of the medical man and to assume responsibilities for which they were not qualified. A nurse should always act under the orders of the medical man, and experience showed that for the successful working of a nursing association there must be harmonious coöperation with the medical profession. With regard to clause 17 of the Bill he thought that the local supervising authority should be responsible for the payment of the medical man who was called in by a midwife. Miss E. M. Burnside also spoke on the same subject, and agreed with Dr. Cox that the local supervising authority, rather than the Poor-law guardians, should be responsible for the payment of medical men.

THE "WELLCOME" PHOTOGRAPHIC EXPOSURE RECORD AND DIARY, 1911.—The "Wellcome" Exposure Record and Diary continues year after year to hold its place in the affections of photographers all over the world. It is essentially a book for the pocket, and is a most handy and up-to-date epitome of photographic art and practice. The articles contained in the literary portion of the 1911 edition, which is just published, are all of a highly interesting and useful character, and serve to help photographers over the technical difficulties of exposure, development, &c. They include directions concerning negative making, factorial, time, machine, tank or stand development, bromide printing, toning, and intensification. Nor are such processes as colour photography and the making of lantern slides and of ozobrome or bromoil prints, forgotten. It is neatly and strongly bound in green cloth boards and fitted with wallet, pencil, and clasp. To the inside of the cover is attached the "Wellcome" Exposure Calculator, with its moveable disc, which enables the exposure to be determined under all conditions of light and scene, by a single turn of the scale. In response to the wish of those amateurs who adhere in practice to one particular brand of plate or film, a special slip for attachment to the disc may now be obtained, which indicates the correct exposure for every stop. This attachment is supplied gratis (on application) to purchasers of the book, by the publishers. Another new feature of this year's edition is the special article on colour photography, in which a simplified method of producing the necessary solutions is given. For the convenience of its world-wide readers and users, the "Wellcome" Exposure Record and Diary is published in three editions—namely, the Northern Hemisphere and Tropics, the Southern Hemisphere and Tropics, and the United States of America. When purchasing, care should be taken to specify which edition is required. The "Wellcome" Exposure Record may be obtained from photographic dealers and booksellers and at railway bookstalls. The price in the British Isles is 1s.

THE SANATORIUM WORK OF THE LONDON CHARITY ORGANISATION SOCIETY.—A report recently issued dealing with this subject should prove valuable to those interested in the results obtained from sanatorium treatment. The society works throughout London, carefully selects its cases, employs a medical referee, keeps the patient away as long as the doctors advise, maintains the dependent family in the breadwinner's absence, and tries to supply him with suitable work on his return. The society had sent away 385 patients up to Dec. 31st, 1909, and is now sending away over 100 annually. All these 385 patients were looked up early this year; it was found that over 50 per cent. were working or fit for work, over 11 per cent. were ill, 26 per cent. were dead, and 12 per cent. could not be traced. All these patients went to well-known sanatoriums; the average length of stay was over 17 weeks. The society considers that these figures amply justify the continuance of the work, and confidently expects still better results in the future. The cost of the treatment is shared by the district committees and the central council; the council's share amounts to over £900 a year, and only £50 comes in subscriptions. The work is unique in London, but so far is little known except to those medical men and other friends of the poor who regularly take advantage of it.

BOOKS, ETC., RECEIVED.

APPLETON, D., AND COMPANY, New York and London.

A Manual of Nursing. By Margaret Frances Donahoe, formerly Superintendent of Nurses, and Principal of Training School, Philadelphia General Hospital. Price 7s. 6d. net.

BAILLIÈRE, TINDALL, AND COX., London.

The Ship-Surgeon's Handbook. By A. Vavasour Elder, M.R.C.S., L.R.C.P. Second edition. Price 5s. net.

BLACK, ADAM AND CHARLES, London.

Who's Who. 1911. Price 10s. net.

The Englishwoman's Year Book and Directory. 1911. Edited by G. E. Mitton. Thirtieth Year of Issue. Price 2s. 6d. net.

The Writers' and Artists' Year Book. 1911. Price 1s. net.

BURROUGHS, WELLCOME, AND CO., London, New York, Montreal, Sydney, Cape Town, Milan, Shanghai, Buenos Aires.

Wellcome's Medical Diary and Visiting List. 1911.

The "Wellcome" Photographic Exposure Record and Diary. 1911. Price 1s.

CHURCHILL, J. AND A., London.

The Medical Directory. 1911. Sixty-seventh Annual Issue. Price 14s. net.

FROWDE, HENRY, AND HODDER AND STOUGHTON, London.

Oxford Medical Publications. Introduction to Practical Organic Chemistry, including Qualitative and Quantitative Analysis and Preparations. By A. M. Kellas, B.Sc. Lond., Ph.D. Heidelberg. Price 3s. 6d. net.

Outlines of Zoology. By J. Arthur Thomson, M.A., Regius Professor of Natural History in the University of Aberdeen. Fifth edition, revised. Price 12s. 6d. net.

PUTNAM'S SONS (G. P.), New York and London.

The Story of the Bacteria and their Relations to Health and Disease. By T. Mitchell Prudden, M.D. Second edition, revised, and enlarged. Price 3s. 6d. net.

REBMAN, LIMITED, London. REBMAN COMPANY, New York.

The Treatment of Syphilis by the Ehrlich-Hata Remedy (Dioxydiamido-Arsenobenzol). A Compilation of the Published Observations by Dr. Johannes Bresler, Chief Physician to the Provincial Medical Establishment at Lüben, Silesia. Second edition, much enlarged. With the Portraits of Ehrlich and Schaudinn. Translated by Dr. M. D. Eder. With an Abstract of the Most Recent Papers. Price 2s. 6d. net.

SUPERINTENDENT, GOVERNMENT PRINTING, INDIA, Calcutta.

Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India. No. 38. Preliminary Report on the Killing of Rats and Rat Fleas by Hydrocyanic Acid Gas. By Captain W. D. H. Stevenson, M.B., I.M.S. (Bombay Bacteriological Laboratory.) Price Annas 9, or 9d.

WALKER, JOHN, AND CO., LIMITED, London.

Walker's Diaries for the Year 1911:—No. 4/184. Morocco, back loop and pencil, Price 7s. No. 3/63. Long-grain Roan, gilt edges, with back loop and pencil. Price 1s. 9d. No. 7/107. Long-grain Roan, gilt edges. Price 1s. 3d. No. 15/215. Long-grain Roan, with monthly index. Price 1s. No. 2/52. Satin cloth. 6d. No. 17/427. ("Graphic") Solid Pigskin, gold roll. Price 2s. 6d. Quarterly Pocket (Vest) Diary. In four parts. Binding No. 621. Roan, gilt edges. Price 1s. "Ruby" Diary (very small for vest pocket). No. 21. Price 1s. "Pearl" Diary. No. 32 (size 2 × 1¼ inches). Velvet calf. Price 1s.

Calendars for Waistcoat Pocket:—"Happy Months" Calendar. Prices 6d., 1s., and 1s. 6d. "Miniature" Calendar. Prices 6d. and 1s.

Walker's Block Calendars:—"The Imperial" (size of block 6¼ × 5 inches). Price 1s. 9d.

"Farringdon" Series of Calendar Cards. No. 11. Cabinet size. In oak frame.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

BOND, FRANCIS THOMAS, M.D. Lond., M.R.C.S. Eng., F.R.S. Edin., has been reappointed Medical Officer of Health by the Thornbury (Gloucestershire) Rural District Council.

FLIGG, WILLIAM, M.B., C.M. Edin., M.R.C.S. Eng., D.P.H. Cantab., has been appointed Visiting Medical Officer to the Royal West of England Sanatorium, Weston-super-Mare.

FURBER, L. G. H., L.M.S.S.A., has been appointed Certifying Surgeon under the Factory and Workshop Act for the Twyford District of the county of Berks.

HUTCHINSON, JAMES RANDAL, M.B., Ch.B. Vict., D.P.H., has been appointed Medical Officer of Health to the County Borough of Wigan.

MUNRO, D. G. MACLEOD, M.D., C.M. Edin., has been appointed Honorary Clinical Pathologist to the Cheltenham General Hospital.

ORMEROD, HENRY LAWRENCE, M.D., B.Ch., B.A.O. R.U.I., has been appointed Medical Officer for the Henbury District by the Thornbury (Gloucestershire) Board of Guardians.

PEYTON, T. HENRY, M.D., D.P.H. T.C.D., has been appointed School Medical Officer for North-West Kent by the Kent County Council.

ROBINSON, W. E., M.D., B.Ch. Oxon., has been appointed Assistant Physician to the Infants Hospital, Westminster, and Honorary Assistant Anæsthetist to the West London Hospital, Hammersmith.

SCOTT, ALEXANDER R. P., M.R.C.S. Eng., L.R.C.P. Lond., has been appointed Second House Surgeon to the Beckett Hospital, Barnsley.

SMITH, EDWIN, M.D. Lond., Barrister-at-Law, has been appointed Lecturer on Forensic Medicine at St. Thomas's Hospital.

WACHER, SIDNEY, F.R.C.S. Eng., L.R.C.P. Lond., has been appointed one of the Medical Referees under the Workmen's Compensation Act, 1906, for County Court Circuit No. 49, and to be attached more particularly to Canterbury, Faversham, Ashford, Tenterden, and Cranbrook County Courts.

WEST, HENRY O., M.B., B.S. Lond., has been appointed Resident Medical Officer at the Royal Hospital for Diseases of the Chest.

WOODWARD, ALFRED C. T., M.B., F.R.C.S. Edin., has been appointed one of the Medical Referees under the Workmen's Compensation Act, 1906, for County Court Circuit No. 21, and to be attached more particularly to Birmingham County Court.

WRIGHT, ARCHIBALD FRANCIS, M.B., Ch.B. Edin., has been appointed District Medical Officer by the Bideford (Devon) Board of Guardians.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BARNES URBAN DISTRICT COUNCIL.—Medical Officer of Health and Superintendent of Isolation Hospital. Salary £275 per annum.

BARNSTAPLE, NORTH DEVON INFIRMARY.—House Surgeon. Salary £100 per annum, with board, residence, and washing.

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—Assistant Physician. Also House Surgeon for six months. Salary at rate of £20 per annum, with board, residence, &c.

BRIDGWATER HOSPITAL.—House Surgeon, unmarried, for six months. Salary at rate of £100 per annum, with board, lodging, and washing.

BRISTOL ROYAL INFIRMARY.—Dental House Surgeon. Salary £100 per annum, with apartments, board, and laundry.

CAIRO, EGYPT.—Medical Tutor at School of Medicine and Registrar to Kasr-El-Ainy Hospital. Salary £E.600 a year.

CANCER HOSPITAL, Fulham-road, London, S.W.—Surgical Registrar. Salary 50 guineas per annum. Also House Surgeon for six months. Salary £70 per annum.

CARDIFF INFIRMARY (GENERAL HOSPITAL).—Two House Surgeons for six months. Salary £30, with board, residence, and laundry.

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W.—Clinical Assistant.

DERBYSHIRE ROYAL INFIRMARY.—House Physician and Second House Surgeon for 12 months. Salary in each case £100 per annum, with apartments, board, &c. Also Assistant House Surgeon for six months. Salary at rate of £60 per annum, with apartments, board, &c.

EARLSWOOD ASYLUM, Redhill.—Junior Assistant Medical Officer, unmarried. Salary £130, with board, lodging, and washing.

ENFIELD AND EDMONTON ISOLATION HOSPITAL, Winchmore Hill.—Resident Assistant Medical Officer. Salary at rate of £150 per annum, with rooms, rations, and washing.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark Bridge-road, London, S.E.—Clinical Assistants for three months.

HASTINGS, ST. LEONARDS, AND EAST SUSSEX HOSPITAL.—Senior House Surgeon. Salary £100 per annum, with residence, board, and washing.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.—Assistant Casualty Medical Officer (and House Physician), unmarried, for six months. Salary £30, with board, residence, &c. Also House Surgeon, unmarried, for six months. Salary £30, with board, residence, &c.

INDIAN MEDICAL SERVICE, India Office, London.—Fourteen Commissions in His Majesty's Indian Medical Service.

LEEDS GENERAL INFIRMARY.—Ophthalmic House Surgeon for six months. Salary at rate of £50 per annum, with board, residence, and washing.

LEEDS PUBLIC DISPENSARY.—Junior Resident Medical Officer. Salary £100 per annum, with board and lodging.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN, 8, Hunter-street, Brunswick-square, W.C.—Demonstrator in Anatomy and Curator of the School Museum (female).

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—Honorary Ophthalmic Surgeon. Also Anæsthetist. Salary £15 per annum.

MANCHESTER ROYAL INFIRMARY.—Resident Medical Officer and Resident Medical Officer at Convalescent Hospital, Cheadle. Salary in each case £150 per annum, with board and residence. Also Medical Registrar. Salary £75 per annum.

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL, Cheetham.—Resident Medical Officer (female) for six months. Salary at rate of £80 per annum.

MARGARET STREET HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, 26, Margaret-street, Cavendish-square, W.—Honorary Physician.

NEWCASTLE-UPON-TYNE, CITY HOSPITAL FOR INFECTIOUS DISEASES.—Resident Medical Assistant. Salary £125 per annum, with board, lodging, &c.

NORWICH, NORFOLK AND NORWICH HOSPITAL.—Assistant House Surgeon for six months. Salary £20, with board, lodging, and washing.

PADDINGTON AND KENSINGTON DISPENSARY FOR THE PREVENTION OF CONSUMPTION.—Assistant Medical Officer. Salary £100 per annum.

POPLAR HOSPITAL FOR ACCIDENTS, Poplar, E.—Assistant House Surgeon for six months. Salary at rate of £80 per annum, with board and residence. Also Radiographer. Salary £50 per annum.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Assistant Resident Medical Officer for four months; also to be Senior Resident Medical Officer for four months. Salary at rate of £50 and £60 per annum respectively, with board, residence, and washing.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Physician for six months. Salary at rate of £80 per annum, with board, residence, and washing. Also Clinical Assistants.

ROTHERHAM HOSPITAL.—Senior House Surgeon. Salary £110 per annum, with board, lodging, and washing.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—Election to the Court of Examiners.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—Assistant Physician.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Physician, unmarried. Salary £50 per annum, with board, lodging, and washing.

SOUTHAMPTON, FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board and residence.

STAFFORD, STAFFORDSHIRE GENERAL INFIRMARY.—Assistant House Surgeon. Salary £82 per annum, with board, residence, and laundry.

ST. MARYLEBONE GENERAL DISPENSARY, 77, Welbeck-street, Cavendish-square.—Honorary Dental Surgeon. Also Honorary Anæsthetist.

ST. PAUL'S HOSPITAL FOR SKIN AND URINARY DISEASES, Red Lion-square, W.C.—Clinical Assistant.

STEPNEY ANTI-TUBERCULOSIS DISPENSARY.—Medical Officer. Salary £250 per annum.

SUNDERLAND INFIRMARY.—House Physician. Salary £30 per annum, with board, residence, and washing.

SWANSEA GENERAL AND EYE HOSPITAL.—House Physician. Also House Surgeon. Salary £75 per annum each, with board, washing, attendance, &c.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Physician for six months. Salary £40, with board, lodging, and laundry.

WANDSWORTH UNION INFIRMARY, St. John's-hill, near Clapham Junction.—Junior Assistant Medical Officer, unmarried. Salary at rate of £120 per annum, with board, lodging, and washing.

WESTMINSTER HOSPITAL, Broad Sanctuary, S.W.—Surgical Registrar. Salary £50 per annum.

WESTON-SUPER-MARE HOSPITAL.—House Surgeon, unmarried. Salary £100 per annum, with board and residence.

WEST SUSSEX COUNTY COUNCIL.—County Medical Officer of Health. Salary £500 per annum.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Resident Medical Officer. Salary at rate of £100 per annum, with board, rooms, and laundry.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies as Certifying Surgeons under the Factory and Workshop Act at Ammanford, in the county of Carmarthen; at Ebchester, in the county of Durham; and at Creetown, in the county of Kirkcudbright.

Births, Marriages, and Deaths.

BIRTHS.

ARNISON.—On Dec. 12th, 1910, at 2, Saville-place, Newcastle-upon-Tyne, the wife of W. D. Arnison, M.D., of a daughter.

ODELL.—On Dec. 14th, at Ferndale, Torquay, the wife of William Odell, M.D., F.R.C.S., of a son.

PARRY.—On Dec. 6th, at Knole, Maidstone, the wife of Captain F. M. Parry, R.A.M.C., of a son.

MARRIAGES.

GRISEWOOD—JAMESON.—On Dec. 11th, at Bombay, Arnold Egbert Grisewood, Captain Indian Medical Service, youngest son of William Grisewood, Esq., of Egremont, Cheshire, to Edith, youngest daughter of Rev. A. P. C. Jameson, of the Rajputana Presbyterian Mission.

MORISON—DOVE.—On Dec. 7th, at St. Paul's Church, Carlisle, by the Rev. W. E. Strickland, assisted by Canon Bower, Fred Hughes Morison, M.D., Carlisle, to Jane Margaret (Daisy), only daughter of Mr. J. C. Dove, of St. Ann's, Stanwix, Carlisle.

DEATHS.

MACKENZIE.—On Dec. 6th, Brigade-Surgeon Lieutenant-Colonel John Mackenzie, M.D., A.M.D., of Cambridge-terrace, Dover, aged 77 years.

N.B.—A fee of 5s. is charged for the Insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

REMINISCENT OF THE FOUNDER OF "THE LANCET."

THE story of THE LANCET in its turbulent days of infancy, the pertinacity with which its Founder waged war against what he considered to be abuses, the bitter spirit which animated the strong defending forces in their attempts to repel their enemy, and the ultimate success of the cause of justice and medical reform, are matters which have been minutely dealt with in these columns when lapse of time allowed them to be discussed dispassionately. Strongly confirmatory of much that we published on the matter, and of additional value because they contain the opinions of an eminent physician who was a contemporary of Mr. Wakley, are the following extracts from an autobiographical work of much interest published by Messrs. Smith, Elder, and Co. in 1884—viz., "Memoirs of Life and Work, by Charles J. B. Williams, M.D., F.R.S., Physician Extraordinary to H.M. the Queen, &c." A regular coöperator in our labours has brought them to our notice. Regretting the inadequacy of medical representation in Parliament, Dr. Williams proceeds to define the qualities which belong to a medical Member of Parliament. He should be—

"..... one well acquainted with the past history and present state of the medical institutions of the country, and who is sufficiently known and respected to possess the confidence of a large portion,—if not a majority, of the members of the Profession. Such a representative,—always well informed and accurate in his subject, and speaking with corresponding decision and a certain amount of self-assertion,—would always command the attention of the House, and become somewhat of a power in the State. The only M.P. who seems to me to have ever attained to anything like this position was the late Thomas Wakley. The early part of his career, as a censorious and radical journalist, was very different from that of his later years as a very popular Member of Parliament and coroner for the Metropolitan county. The journal,—which he created, and which *made him*,—in spite of its early ribaldries and abusive personalities, was interwoven with a web of truth and justice which gave strength to its attacks and gained the attention and support of the public; notwithstanding the bitter opposition and persecution from old corporations and long-established monopolies brought in array against it. .....

"When I first came to London [1830] the 'Lancet' was already a power, which had made itself felt:—relished by the profession at large, which has rather a democratic taste, and hailed as champion of their rights,—received with curious interest by the public, which is alive to anything strong or sensational:—but by the aristocracy of the Profession, including the accused Hospital authorities and Corporations—branded as malignant and revolutionary; and to be opposed in every possible way, private and public. To be suspected of connection with the 'Lancet' was to be tabooed by societies and respectable bodies; and woe to the student going in for examinations, if he were supposed to have supplied it with reports! Nevertheless the Journal continued to increase in circulation; and no wonder; for over and above the censorious and scurrilous matter, which served for sauce, it supplied useful food for the minds of its readers, in copious medical news and reports of lectures. Wakley showed his ability as an editor, not only in his own slashing and incisive articles in which he attacked abuses and held up to ridicule and condemnation the inefficiency and neglect of institutions and of their officers, but also in his gathering around him a staff of really clever and well-informed men, who could supply to his pages the most recent knowledge, and guide his counsels by the scientific spirit of progress, required by the forward movements of the times.

"At St. George's Hospital I was in the anti-'Lancet' camp, and was strongly prejudiced against that journal. In fact, I never read it; and all my support and contributions were bespoken by Dr. Macleod, physician of the Hospital, in behalf of the 'London Medical Gazette,' which he edited, and which was said to have been started in opposition to the 'Lancet.' At University College Mr. Wakley's sons were my pupils, and I soon began to receive from him marks of courtesy and confidence. He placed several members of his family under my care, and he recommended a number of patients to consult me. Among these were several Members of Parliament. They familiarly called him 'Tom Wakley,' and all testified how much he was liked and respected in the House by all parties .....

"Although I had these repeated proofs of Mr. Wakley's goodwill towards me, I knew little of him personally, till he consulted me for his own health in the autumn of 1861. I was agreeably surprised with the gentleness and geniality of his manners, and the homely simplicity of his conversation. His ill-health had impaired the vigour of his expression; but there was an earnestness in his look, with an occasional twinkle of his eye, showing forth the workings of energy and of humour in his nature. The hopeful courage and self-confidence, which had borne him up through life against any amount of opposition and difficulty, did not forsake him in the danger which now threatened him. I have not the notes of his case by me; but so far as I can recollect, it was one of inflammatory origin, rather than of tuberculous consumption: but it certainly went on to the formation of cavities, which rendered the prospect of the future very serious: and the more so, as his sanguine temperament and active mind tended to make him impatient of the restriction necessary for any chance of recovery. ..... In the balmy air and quiet of Madeira he so far improved as to pass the winter fairly without any material increase of disease. His death, which took place in May, was from hæmorrhage, brought on, after a boating excursion, by a fall in landing on the steep sloping beach (which I remember well, and the difficulties experienced in landing). The occurrence shows that he was still in possession of considerable activity and strength, and suggests the possibility that his ardent temperament was still apt to lead him beyond the bounds of prudence.

"Without doubt the works of Thomas Wakley entitle him to the foremost rank as a great Medical Reformer; and the successful results of his labours in correcting abuses and neglects of institutions, and in promoting and improving the means of medical education and diffusion of knowledge, have earned for him the gratitude of the Profession and of the Public. No one has ever so consistently and successfully defended the rights and best interests of the Medical Profession in Parliament, in Courts of Law, and through the Press; and if in his early life, his daring and asperities raised against him a host of enemies, they were mostly pacified, and many converted into friends, in his later years, when the beneficial fruits of his efforts became apparent."

LARGE INCISIONS.

To the Editor of THE LANCET.

SIR,—It is somewhat rash, I admit, for a general practitioner, especially after only one or two cases, but I should like to ask operating surgeons whether extensive abdominal incisions are justifiable.

I have had two patients recently, in each of whom the incision was made from the pubes to above the umbilicus, and each survived less than 12 hours. Such an event cannot be considered satisfactory from a surgical point of view. In one of the cases there was no doubt as to the human improbability of survival, but still it would have been more satisfactory had the patient succumbed as a result of a fight with the disease. Such an extensive incision, with the unavoidable consequent exposure of the abdominal viscera and prolonged exploration, does not, in my humble opinion, give the patient a ghost of a chance. Of course, it is important that local encysted collections of pus should be liberated, but the fact of a collection of pus being encysted shows that nature has been successful to some extent. It would appear better to leave such a collection alone in the absence of sufficient diagnostic points to localise it than to explore the general abdominal cavity. In the case referred to the chief seat of disease was in the pelvis, from which had spread a general septic peritonitis, with pus in the upper abdominal regions, but not encysted. The acute symptoms had lasted only about 12 hours previous to the time of admission to hospital and 24 hours from the time of operation—that is to say, the patient was up and about as usual 12 hours before going to the hospital and six hours before I was sent for.

As regards the other case, there was no reason that I could see, except the extensive incision and exposure, why the patient should not have survived. Of course, the operation was absolutely necessary, but what I am calling in question is the extent of the incision.

I have had a third case which may be mentioned here, general peritonitis having supervened on an obscure cause. The patient was sent to a hospital. An incision was first made in the left iliac region where nothing was found except the peritonitis, but when another incision was made in the right iliac region the seat of the trouble was found. The patient recovered. In my own mind I have no doubt that had such an extensive incision as was made in the other two cases been made in this case the result would not have been successful. It would be better to improve our diagnostic methods in localising disease, so that we need not resort to extensive explorations.

I am, Sir, yours faithfully,

Dec. 1st, 1910. X.

SCHOOL-GIRLS AND DOMESTIC HYGIENE.

AT Brighton a school for home training is now at work. It was opened in September, and it is hoped that 80 girls will every year pass through the school after leaving their elementary studies. So far, only a score or so of children have availed themselves of the course of lessons, whereas no fewer than 300 had left school. A member of the board has proposed that the course of home training should be compulsory for girls during the last three months of their school life, and this seems to be exactly the indication of the Board of Education Memorandum on the Teaching of Infant Care and Management in Public Elementary Schools which has just been issued. After referring to the importance of girls and women being taught how

to take care of infants, it says: "The ultimate aim of a State system of education given to girls in the public elementary schools should be to equip them in the best possible way for the duties which fall to them in after-life. What is commonly called book-learning has in past years been too much regarded as the supreme purpose of our elementary schools, and it is beginning to be widely realised that the teaching given in these schools might with advantage be made more practical in certain directions; and that it might, especially in the case of the elder girls, be more definitely directed towards arousing in, and increasing the knowledge of, the ordinary routine of domestic hygiene, including infant care. Few of these girls have mothers who are in a position to give them an efficient training in home management, and the home conditions must often render it very difficult for this to be done. It is thus desirable to consider in what way this subject may be most appropriately and usefully taught at the school in order to supplement, or correct, the inadequate, or inaccurate, knowledge of domestic matters acquired in the home; remembering always that the training should be of a twofold nature, namely, a training in domesticity and a training in infant care, and that it must be designed not to replace but to stimulate and encourage teaching by the mother in the home." Excellent work is already being carried on in Brighton with the object of diminishing the rate of infant mortality, while the school for home training has commenced its operations in the hope of increasing interest in matters domestic among girls between the ages of 14 and 16. The main idea of the school is to equip the girls as far as possible for the life they will lead in their own homes, teaching them at the same time economy, thrift, and the correct methods in practical household management. Thus, to a large degree, it would seem that the highly useful memorandum from the Board of Education has been anticipated at Brighton, and that if application were made to add domestic hygiene to the school curriculum for girls at a certain age, assent would readily be given. The progress of the scheme at Brighton will be watched with much hopeful interest.

SHOULD THE RHEUMATIC AND GOUTY DRINK CIDER?

To the Editor of THE LANCET.

SIR,—Medical opinion seems to be much divided on this question. Perhaps some of your readers would give me their experience.

I am, Sir, yours faithfully,

Windermere, Dec. 12th, 1910. THOS. DOBSON, M.D. St. And.

Constant Reader, in requesting information as to the date of the forthcoming International Hygiene Exhibition in Washington, has omitted to send his name and address. He is referred to the Diary of Congresses published this week.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

A DIARY OF CONGRESSES.

THE following Congresses, Conferences, and Exhibitions are announced for 1910:—

Dec. 18th–19th (Rome).—National Meeting of Sanitary Officials.
" 19th–22nd (Rome).—Twentieth Congress of Internal Medicine.

In 1911:—

Feb. 20th–25th (Cairo).—Fifth International Congress for the Blind.
March 2nd–6th (Berlin).—Thirty-second Balneological Congress.
" 23rd (Paris).—First Congress of French Medical Journalists.
April 4th–7th (London).—Fourth Annual Nursing and Midwifery Conference and Exhibition.
" 18th–20th (Paris).—Third Congress of Physiotherapy of French-speaking Physicians.
" 19th–22nd (Wiesbaden).—Twenty-eighth German Congress of Internal Medicine.
May–October (Dresden).—International Hygiene Exhibition.
May–October (London, Crystal Palace).—Festival of Empire Imperial Exhibition. (Profits to King Edward VII. Hospital Fund.)
May–October (?) (London, Shepherd's Bush).—Coronation Exhibition.
June (Paris).—First Congress of the International Medical Association for the Prevention of War.
June 5th–8th (Kolberg, Prussia).—Fifth International Congress of Thalassotherapy.
June and July (Romford).—Town Planning and Modern House and Cottage Exhibition.
July (Birmingham).—British Medical Association.
July 24th–29th (Belfast).—Congress of the Royal Sanitary Institute.
August or September (Berlin).—Third International Laryngo-Rhinological Congress.
September (Brussels).—Exhibition of Fractures.
" (Turin).—International Congress of Pathology.
Sept. 11th–15th (Berlin).—National Congress for the Study and Prevention of Infantile Mortality (*Gouttes de Lait*).
" 11th–16th (The Hague).—Thirteenth International Congress on Alcoholism.
" 18th–23rd (Sydney).—Australasian Medical Congress.
" 18th–24th (Turin).—Fourth National Congress of Hygiene.
" 24th–30th (Rome).—International Congress on Tuberculosis.
" 25th–29th (Rome) Seventh International Congress of Dermatology and Syphilology.
October (Cologne).—International Congress of Criminal Anthropology.
Oct. 1st–4th (Liége).—Second Congress of Alimentation.
Dec. 4th–9th (Havana, Cuba).—American Public Health Association.
(Date not fixed) (Genoa).—International Exhibition of Marine Hygiene.
(Date not fixed) (Rome).—International Exhibition of Social Hygiene.
(Date uncertain) (Turin).—International Exhibition of Industry and Labour.

In 1912:—

July (?) (Cologne).—International Congress of Nurses.
September (Prague).—International Congress of Radiology and Medical Electrology.
September (Berlin).—Sixth International Congress of Obstetrics and Gynæcology.
" Visit of German Medical Men to America.
Nov. 22nd–29th (Washington, D.C.).—Fifteenth International Congress of Hygiene and Demography.

In 1913:—

(London).—Seventeenth International Congress of Medicine.
(Dresden (?)).—International Conference on Cancer.
August (Buffalo).—Fourth International Congress of School Hygiene.

In 1915:—

(London).—International Prison Congress.
(London).—Imperial Exhibition (?)

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2 30 P.M., Mr. Dunn: Diseases of the Eye.
TUESDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin.
WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Mr. B. Harman: Diseases of the Eye. 2.30 P.M., Dr. Robinson: Diseases of Women.
THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Mr. Dunn: Diseases of the Eye.
FRIDAY.—10 A.M., Dr. Robinson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. 2.30 P.M., Dr. Abraham: Diseases of the Skin.
SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Diseases of the Eye. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—2 P.M., Operations. 2.15 P.M., Mr. Turner: Surgery. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4 P.M., Mr. R. Lake: Ear and Throat. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.
TUESDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Wells: Medicine. 3.15 P.M., Mr. R. Carling: Surgery. 4 P.M., Sir M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin. 2.15 P.M., Dr. R. Wells: Differential Diagnosis of Early Forms of Insanity.
WEDNESDAY.—2 P.M., Operations. 2.15 P.M., Dr. F. Taylor: Medicine. 3.30 P.M., Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.
THURSDAY.—2 P.M., Operations. 2.15 P.M., Dr. G. Rankin: Medicine. 3.15 P.M., Sir W. Bennett: Surgery. 4 P.M., Dr. Sale-Barker: Radiography. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Ear and Throat.
FRIDAY.—2 P.M., Operations. 2.15 P.M., Dr. R. Bradford: Medicine. 3.15 P.M., Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 12 noon, Skin.
SATURDAY.—2 P.M., Operations. Out-patient Demonstrations:—10 A.M., Surgical and Medical. 11 A.M., Eye.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square, W.C.

THURSDAY.—6 P.M., Chesterfield Lecture:—Dr. M. Dockrell: Baldness, its Causes and Treatment.

ANCOATS HOSPITAL, Manchester.

The next Clinic will be held on Thursday, Jan. 12th.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (19th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M.), St. Mark's (2.30 P.M.), Central London Throat and Ear (Minor 9 A.M., Major 2 P.M.).

TUESDAY (20th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M., Ophthalmic, 2 P.M.), Tottenham (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.), Royal National Orthopædic (9.30 A.M. and 4 P.M.).

WEDNESDAY (21st).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

THURSDAY (22nd).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal National Orthopædic (9 A.M. and 3.30 P.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M. and 2 P.M.), Tottenham (Gynæcological, 2.30 P.M.), West London (2.30 P.M.), Central London Throat and Ear (Minor, 9 A.M., Major, 2 P.M.).

FRIDAY (23rd).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Royal National Orthopædic (3.30 P.M.), Soho-square (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.), St. Peter's (2 P.M.), Central London Throat and Ear (Minor. 9 A.M., Major, 2 P.M.).

SATURDAY (24th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 A.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9 A.M. and 9.30 A.M.), West London (2.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic (2 P.M.) Hospitals operations are performed daily.

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METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Dec. 14th, 1910.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rain fall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Dec. 8	29·25	E.	...	56	52	47	48	49	Overcast
" 9	29·11	S.W.	0·14	63	52	49	48	50	Cloudy
" 10	28·95	S.	0·25	59	51	48	47	48	Raining
" 11	29·16	S.W.	0·12	79	53	47	46	48	Cloudy
" 12	29·39	S.	0·05	57	52	48	48	49	Overcast
" 13	29·27	S.W.	0·13	66	53	47	48	51	Raining
" 14	29·54	S.W.	0·15	66	52	50	48	50	Cloudy

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